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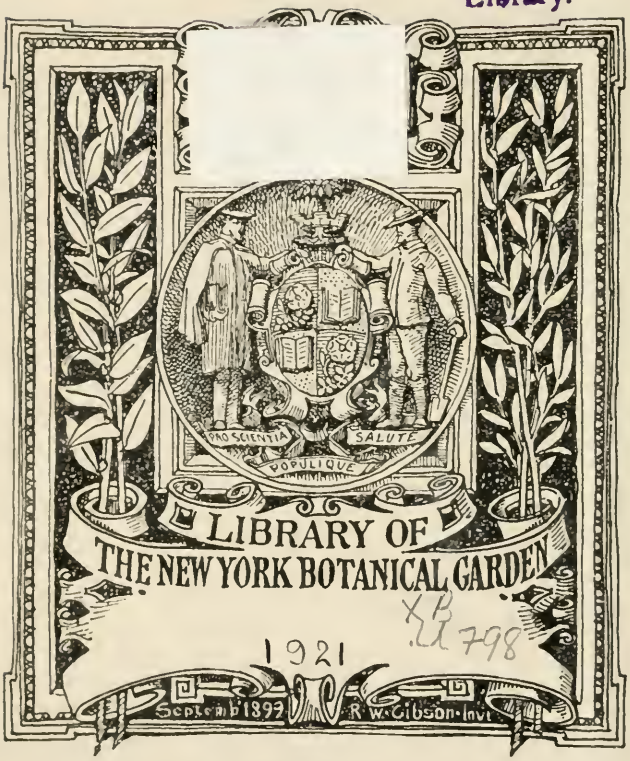

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OF

THE NEW YORK BOTANICAL GARDEN

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BULLETIN
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Vol. XI No. 41

GUIDE TO THE ECONOMIC MUSEUM OF THE NEW YORK BOTANICAL GARDEN

PREPARED BY

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INTRODUCTION

The plan of the Economic Museum provides for the illustration of all useful products derived directly from plants and, so far as practicable, for the presentation of characteristic specimens of the plants themselves.

The United States possesses no such large general collection of useful plant products as those to be found at Kew, South Kensington, Berlin, Calcutta, and other Old World centers. There are, indeed, many collections, some of them fairly large, which represent special industries, such as *materia medica*. Some of our larger drug houses possess extensive collections of this kind, but they are maintained chiefly for their own working purposes and are not founded on broad scientific lines. Several of our schools of pharmacy, notably that of Columbia University, strive for more complete collections, but these are primarily designed for teaching purposes. We have also a number of excellent collections representing forestry, notably that at the American Museum of Natural History in New York, but relating chiefly to North American trees.

In addition to these special exhibits, we possess a number of museums organized on the basis of a general representation of vegetable products, each of them possessing some special characteristic of its own. The most important of these collections is that of the federal government at Washington. Its object is chiefly economic, although its scientific value is great. Next in importance, perhaps, are the collections of the Philadelphia Museums. These, however, are purely commercial and the method of their accumulation has been such as to preclude, to a great extent, the element of botanical authentication of the article, the commercial relations of the products themselves being the special object of illustration. In Chicago, we have the Field Columbian Museum, which aims particularly at the most elaborate possible representation of types.

The special characteristics of our Museum are correct nomenclature, this method being followed throughout, and positive authentication of the articles exhibited. We possess, it is true, a large amount of material from commercial sources, which, although gathered with every possible precaution as to authenticity, presents no *prima facie* evidence as to its botanical origin. The more valuable portions of our exhibits are those which have been taken from the growing plants by special collectors, in connection with herbarium material displaying flowers, fruits, leaves, etc., which is suitably preserved in our own herbarium, with cross references from one collection to the other. In the pursuit of this object and in the extent to which it has been carried, our collections are probably unique. The presence of such authenticated specimens beside commercial samples of the same, and with an opportunity thus presented for comparison and confirmation, imparts a value to the latter which is beyond estimate, even from a practical point of view.

Another distinguishing character of our collections is the extent to which aboriginal and domestic customs and uses are represented by them. At the first establishment of our

Garden, long before our buildings were erected, or even planned, the collection of authenticated specimens of local products was begun and vigorously pursued. Since that time, no opportunity has been lost by our collectors for securing the useful plant products, similarly authenticated, of the regions visited. In this way we have come to possess a large and world-wide representation of products that are as yet not commercially known outside of the producing localities. A collection thus accumulated becomes increasingly valuable as a center of study of little-known subjects.

A third feature which may be regarded as somewhat characteristic is the extent to which we have gone in preserving fresh material, chiefly in formaldehyde solutions, representative of the various products. It has been a most laborious and expensive operation to carry into many remote regions, often destitute of roads, supplies of large glass jars, with preservative material, and to return them filled with specimens, but the result has more than repaid the sacrifice, as it has brought within the reach of the people of this metropolis the study of many things not otherwise to be seen, except by visiting the countries where they are grown. The advantages of study from such collections are not alone practical. Important questions relating to taxonomy, morphology, and physiology may be answered by reference to fleshy fruits and flowers preserved in their natural growing state, which could not be demonstrated in any other way.

Our museum collections now number about 8,000 articles, many of them also represented in the living state in our economic plantations and conservatories.

Location and Classification of the Exhibits

The Economic Collections occupy the entire main floor of the museum building and at present fill 173 cases; which are arranged in units, each unit, when complete, comprising 6 cases. Not all of these cases or units are as yet installed, additions being made from time to time as the accumu-

lation of specimens proceeds. These additional units and cases have been accounted for in *the numbering, which begins on the left as one enters the building.*

The primary classification of the articles is in accordance with their use as products, as indicated in the following synopsis. Those of each of these classes are then arranged in the botanical sequence of the plants yielding them, proceeding from the lower to the higher groups. Exceptions to this arrangement are the foods and drugs, these groups being so large that they are subdivided in accordance with the portion of the plant represented, from root to seed. The articles of these subdivisions are then arranged in botanical sequence.

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With Descriptive Notes and Other Information

Plant Hairs and Fibers

In common parlance, some plant hairs, such as cotton, are often spoken of as "fibers," but there is a valid distinction between these two classes of tissues, both of which possess important uses in the arts. Fibers are internal structures pertaining to the framework of the plant, while hairs are of epidermal origin.

Plant Hairs

Plant hairs belong to the class of structures known as *trichomes*. These are appendages developing from the epidermis of various parts of the plant, and include scales, papillae, spicules, epidermal glands, prickles, and all other appendages of the superficial layers of cells. They serve the plant through protection, nutrition, and seed distribution. When long, slender, and flexible, they are known as

hairs, and a number of these have important economic relations.

Cotton

Cotton, by far the most important, economically, of all trichomes, consists of the hairs removed from the seeds of several species of *Gossypium*, of the Mallow family (*Malvaceae*).

The seeds grow in a pod known as the "cotton boll," which splits open when ripe, disclosing the mass of hairs in which the seeds are embedded, usually white, but sometimes brown. An attempt is now being made, by crossing and breeding, to secure cotton producing black hairs. This hair is known as the "staple" and the cotton is known as "long staple" or "short staple," according to its length. In some species, the seeds separate very readily from the hairs and come away free from them. In others, the hairs are tightly and permanently attached to the seeds and must be cut off. This is done by a machine known as the "cotton gin," and the operation is known as "ginning." After being ginned, the seeds still have short pieces of hair adhering, known as the "lint." This lint is removed by another machine and is used for various purposes, especially in the manufacture of gun-cotton.

1.[1] Peribebuy cotton, on the seeds. Produced at Peribebuy, Paraguay.
2. Tacuaral cotton, on the seeds. Produced at Tacuaral, Paraguay.
3. Crude Natal cotton. Produced at Natal, South Africa.
4. A finer quality of the same, removed from the seeds.
5. San Bernardino cotton, on the seeds. Produced at San Bernardino, Paraguay.
6. Villa Rica cotton, on the seeds. Produced at Villa Rica, Paraguay.
7. Colombian cotton. Grown in Colombia, South America. Presented by the Museum Association of Newark, New Jersey.
8. Coton Blanco (white cotton).—The opened bolls of *Gossypium arboreum* Willd. Native of the Orient and cultivated. Collected at Mollendo, Peru, by Albert L. de Lautreppe in 1901.
9. The same, the fiber upon the seed.
10. The same, fiber removed from the seed.
11. Coton Bruno (brown cotton).—A variety of cotton with brown fiber, attached to the seed. Produced at Rio de Puira, Peru.

[1] Numbers 1–23, unless otherwise stated, were presented by the Field Museum of Natural History, at Chicago, Illinois.

12. The same, collected at Rio de la Chira, Peru.
13. Cotton produced at Tengor, Chile.
14. Cotton produced at Copiaco, Chile.
15. Silky cotton from the same place.
16. Light "Vicunya" cotton from the same place.
17. Wild cotton.—The opened bolls of *Gossypium punctatum* Sch. & Thon. Native of tropical America and cultivated. Collected by N. L. Britton in 1908, Jamaica, West Indies. (See herbarium specimens.)
18. Open cotton bolls of the same species. Grown at Fayette, North Carolina. Presented by Mrs. J. H. Eggleston.
19. American upland cotton.—The fiber of the same removed from the seed.
20. Barbadoes cotton.—The cotton of *Gossypium barbadense* L. Native of the West Indies and cultivated. Collected by N. L. Britton and C. F. Millspaugh in March, 1907, at Cat Island, Bahamas, where it had escaped from cultivation.
21. Algodon Despipitado (cotton deprived of its seeds). From Apatzingan, Mexico.
22. Algodon Coynche.—A variety with brown fiber. Produced at Oaxaca, Mexico.
23. Algodon Estrangero (foreign cotton).—Cotton upon the seeds, grown at Apatzingan, Mexico, from imported seed.
24.[2] The open bolls.
25. Cotton grown at Sarabia, Negros.
26. Cotton grown at Bulas.
27. Another sample from the same locality.
28. Cotton grown at Lingajon.
29. Cotton grown at Arapo, Cebos.
30–33. Philippine Island cottons without definite data.
34. Seeds of American upland cotton with the lint attached. Grown at Para, Brazil.
35.[3] Crude cotton fiber before treatment.
36. Lapped fiber ready for carding.
37. Carded cotton ready for final cleaning.
38. Cleaned cotton ready for bleaching.
39. Cleaned and bleached cotton rendered absorbent and ready for packing.
40. Waste from absorbent cotton during its manufacture.
41. Fly absorbent waste taken out by carding.
42. Card strippings.—Another waste product removed.
43.[4] Ordinary.
44. Good ordinary.

[2] Numbers 24–29 comprise a set of Philippine Island cottons, presented by E. B. Southwick.

[3] Numbers 35–42 represent the products obtained in the successive operations in the manufacture of absorbent cotton for surgical purposes. In this work, the cotton must be scrupulously freed from all impurities and fat, thoroughly bleached and rendered aseptic. Presented by Seabury and Johnson, of New York City.

[4] Numbers 43–49 form a series of samples representing commercial grades of cotton recognized by the New York Cotton Exchange.

45. Low middling.
46. Middling.
47. Middling fair.
48. Good middling.
49. Fair.
50. Ginned Sea Island cotton. From the Clark Thread Company.
51. Ginned Egyptian cotton. From the Clark Thread Company.

Cotton Yarn

Cotton yarn is employed for weaving into cloth. It is produced by a series of manufacturing processes which begin with the removal of the cotton from the bale and its separation into a loose mass which can be easily handled. The machine which performs this work is the *bale-breaker*. In the process, much of the coarse foreign matter is removed from the cotton. The next process is *lapping* and *blending*. A thin layer, known as a *lap*, is taken from each variety or grade of cotton that is to enter into the mixture and these laps are laid one upon another, in the desired order and amount, until a suitable pile has been formed. The cotton, as it is to be used, is then cut off in slices from the sides of this pile. This cotton is then run through one or more scutching machines which remove the impurities and somewhat straighten it. It is then carded, in order to still further clean and straighten it. It is then put through a number of machines which more thoroughly intermingle the fibers of the different grades originally mixed. In this work several strands or cords are run through a machine which unites them into one lap. Several of these laps are united similarly, and this process is repeated until the intermingling is perfected. Most of these machines remove remaining impurities from the lap. From the final lap the yarn is spun by a machine called the spinning-jinney. The yarn is then put through one or more boiling processes to cleanse and free it from fat, after which it is bleached or dyed and wound upon spools or formed into hanks.

52. A dried specimen of the American upland cotton plant, *Gossypium punctatum* Sch. & Thon.

53. A miniature cotton bale as pressed at the place of production, ready for the market. Presented by James Dillingham, of New York City.
54–56. Miniature cotton bales.—By comparison with 53, containing the same amount of cotton, these indicate the reduction in size effected by the War Department, in order to economize transportation during the great war. Same donor.
57. Another miniature cotton bale.
58.[5] Cotton after passing through the bale-breaker.
59. The coarse waste matter removed by the bale-breaker.
60. Waste removed by the finisher scutcher.
61. Waste removed by the carding machine.
62. Cotton lap produced by passing through opener scutcher.
63. Cotton lap or carded web produced by passing the preceding through the finisher scutcher.
63.1. Lap made by doubling four laps from opener scutcher and passing through finisher scutcher.
64. Carded sliver made from carded web.
65. Derby lap, made by uniting 14 cords of carded sliver and passing through Derby machine.
66. Ribbon lap, made by uniting 6 Derby laps and passing through ribbon machine.
67. Comber sliver, made by uniting 8 Derby laps and passing through combing machine.
68.
69. First drawing sliver, made by uniting 6 cords of comber sliver.
70. Second drawing sliver, made by uniting 6 cords of first drawing sliver.
71. Third drawing sliver, made by uniting 6 cords of second drawing sliver.
72. Slubbing sliver, made from third drawing sliver.
73. Intermediate sliver, made by uniting two strands of slubbing sliver.
74. Roving sliver, made by uniting two strands of intermediate sliver.
75. Jack sliver, made by uniting two strands of roving sliver.
76. Mule spinning yarn, made by uniting two strands of jack sliver.
77. Roving spinning yarn, made by uniting two strands of jack sliver.

Cotton Thread

Cotton thread may be regarded as a thin yarn of extra strength and quality. Its manufacturing process is essentially the same as that for yarn, a superior quality of long-staple cotton being employed.

Darning cotton is a form intermediate between thread and yarn.

Crochet cotton is intermediate between sewing thread and darning cotton.

[5] The remaining specimens in this series were presented by the Clark Thread Company, of Newark, New Jersey.

Any form of thread may be finished with a dull or lustrous surface, in accordance with the process employed.

Mercerized thread has received a treatment giving it a surface resembling that of silk.

The samples in this exhibit were presented by the Clark Thread Company.

78. Darning cotton of various colors, 48 yards on a spool.
79. Luster-finished crochet yarn on bobbin.
80. Crochet yarn of various colors, 100 yards on a spool.
81. Sample card of same.
82. Luster-finished crochet yarn of various colors.
83. Sample card of same.
84. Spools for holding cotton thread.
85. Spool of 1,200 yards of cotton thread, more than ½ mile.
86. Cotton thread of various colors, 200 yards on a spool.
87. Sample card of same.
88. Cotton thread of natural gray color.
89. The same, boiled preparatory to bleaching.
90. A Swift, an instrument used in winding thread to form hanks.
91. Shuttle bobbins.
92. Cotton thread after first treatment with bleaching fluid.
93. The same after second treatment with bleaching fluid.
94. The same, washed after being bleached.
95. The same, fully prepared for being spooled.
96. The same, on spool.
97. The same, on bobbin and tube.
98. The same, on bobbin and cone.
99. The same, in various stages of the black dyeing process.
100. The same, dyed black.
101. Black thread on bobbins, and a spool of 200 yards.
102. Cotton web.
103. Cotton thread boiled in preparation for dyeing in various colors.
104. The same, dyed yellow.
105. Mercerized crochet yarn, natural color.
106. The same, bleached.
107. Crochet yarn with luster finish, of various colors.
108–111. Cotton lint prepared for the making of gun-cotton, which is tri-nitro-cellulose. For its manufacture, the purest form of cellulose is desired, and purified cotton is about the best material of the kind obtainable. It is supplied in the form of waste material from the manufacturers of cotton goods. Presented by the Massassoit Manufacturing Company, of Fall River, Massachusetts. Because of its dangerously explosive nature, finished gun-cotton is not here exhibited.
108–109. Samples of the crude lint.
110–111. The same, washed and bleached, ready for nitrating.
112–134. Pyralin, a celluloid-like product. Like gun-cotton, its manufacture

starts with a pure form of cellulose,—in this case paper,—preferably made from cotton fiber. Presented by E. Dupont de Nemours & Co., Wilmington, Delaware.

112. Shredded paper, ready for nitrating.
113. The nitrated paper.
114. Sublimed camphor, or Flowers of Camphor, added in the manufacturing process.
115. Pyralin as it comes from the mixing machine.
116. The preceding as it comes from the rolls.
117–120. Ivory sheeting of different colors.
121–122. The same, in transparent form.
123–126. Ivory rolls of various colors.
127. An ivory tube.
128. A mirror blank.—A piece of ivory sheeting cut into form for a mirror frame.
129. The finished mirror frame.
130. Bored brush blank.—A piece of ivory sheeting cut into form for a brush and bored to receive the bristles.
131. The completed brush.
132. Ivory comb blank.—A piece of ivory sheeting cut into form for combs.
133. The same cut to form two combs.
134. The finished ivory comb.

In many cases the plant hairs which envelop the seeds do not grow from the seeds themselves, but from the inside of the pod, as in the following.

135. Pachote tree.—A leafy and fruiting branch of *Ceiba*, probably *C. pallida* Rose (*Bombacaceae*—Bombax Family). Native of tropical regions. Collected by H. H. Rusby, at Empalma de Gonzales, Mexico, in 1910.
136. Pachote pods.—The fruits of *C. pentandra Gaertn.* Collected by H. H. Rusby in Mexico, in 1910.
136.1. The fiber of the same removed from the pods. From Jalisco, Mexico.
137. The fruits of the above species, grown in the Philippines and presented by E. B. Southwick.
138. Another Philippine sample presented by Theodore Müller.
139. A commercial sample of the same from the New York market. Presented by H. H. Rusby.
140. Pachote fiber.—The hairs removed from the pods and ready for stuffing pillows and mattresses.
141. Baina Ceiba Barraguda.—The hairs of the same or a closely related plant. From the Field Museum of Natural History.
142. Guano.—The plant hairs of a species of *Ochroma*, the Corkwood tree, Balsa-tree or Raft-tree, attached to the inner portions of their pods. (Same family.) Native of tropical America. Specimen collected by Mr. and Mrs. A. A. Heller in Porto Rico.
143. The same, removed from the pods and ready for use in stuffing pillows and mattresses.
144. Milk-weed, or silk-weed, hairs.—The hairs of *Asclepias syriaca* L. attached to their seeds and contained in their pods. (*Asclepiadaceae*—Milk-weed Family.) Native of the United States. These hairs have been used for weaving into fabrics, but only experimentally. The fabric has a very

beautiful satiny appearance, but little strength or durability. They are also used for stuffing pillows and for similar purposes.

Plant Fibers

Plant fibers occur in the wood and bark of roots and stems, and in the stems and framework of leaves and fruits, to which structures they impart strength, toughness, and elasticity. Those occurring in the wood are called *wood-fibers;* those in the bark, *bast-fibers*. They are composed of elongated and thick-walled cells arranged in strands. They are among the most important of useful vegetable products, being the principal element of value in timber. Of them are constructed ropes, cordage, thread, bagging, matting, linen fabrics and many other articles. They enter largely into the making of paper. In the making of brooms, brushes and some other articles, the entire stems containing the fibers are employed. In making hats, baskets, and many forms of mats, the stems are split into narrow bands, which are woven or plaited together. Chair seats are often made by twisting together the entire leaves of grasses, sedges, and rushes containing tough fibers. For use in ropes, cordage and most woven fabrics, the fibers are removed and freed from adhering tissue and separated into more or less narrow strands.

In some cases, small plants of a very fibrous nature are used in their entirety, to impart elasticity and for other purposes, as in the two following.

145. Lichens.—*Ramalina complanata* (Sw.) Ach. (*Usneaceae*—Beard-moss Family): *Dendrographa leucophaea* (Tuck.) Darbish and *D. minor* (Tuck.) Darbish (*Roccellaceae*—Roccella Family).

146. Oak-moss.—Species of lichens in the genus *Ramalina* (*Usneaceae*). Collected from oaks. Used for stuffing pillows and mattresses. From the New York market.

147. Amadou or German tinder. Surgeon's agaric.—The interior of the fruit-body of *Elfvingiella fomentaria* (L.) Murrill (*Polyporaceae*—Polypore Family) freed from soft, cellular matter and softened, then blocked and pressed to form a peasant's hat. Acquired in Germany and presented by Charles F. Chandler. This product receives the above names because of its native use as tinder and its surgical use for making absorbent compresses.

148. Resam.—The stems of *Dicranopteris linearis* (Burm.) Underw. (*Gleicheniaceae*

—Gleichenia Family). Native of the East Indies, and yielding a useful fiber. Acquired in 1901, on the Island of Singkep, by Mr. Percy Wilson, together with the following articles (Nos. 149–158) made from it.

149. Crude Resam fiber.—Strips of fiber split from Resam.
150. Kilog.—Fibers prepared from Resam splints. Specimens from the Philippine Islands. Presented by Theodore Müller.
151. A finer quality of the same.
152. A tin instrument, with perforations of graduated size, through which the Resam is drawn to produce splints of various sizes.
153. Five stages in the manufacture of ornamental hats from Resam, worn on festal and holiday occasions.
154. The same in finished state.
155. Four unfinished cigar cases made of Resam.
156. The same, finished.
157. Another style of same.
158. Ordinary hat, ornamented with Resam.
159. Nita.—Splints from the stem of *Lygodium circinatum* (Burm.) Sw. (*Schizeaceae*—Curly-grass Family). Native of the Philippine Islands. Presented by Theodore Müller.
160. Jaguaya.—The stems of *Stenochlaena palustris* (Burm.) Bedd. (*Polypodiaceae* —Fern Family). Native of the Philippine Islands, and yielding a useful fiber. Same donor.
161. Japanese rope made from the fibers of *Thuja obtusa* Moench. (*Pinaceae*—Pine Family.) Native of Japan. From the Field Museum of Natural History.
162. Pine-wood braid.—Made from the bast-fibers of white pine, *Pinus Strobus* L. (Same family.) Native of North America. Used in the making of women's hat-bodies. Presented by Edwin Sommerich, of New York.
163. Unfinished hat-body made from same. Same donor.
164. Bleached Cat-tail leaves.—The bleached leaves of *Typha angustifolia* L. (*Typhaceae*—Cat-tail Family). Native of temperate regions. Specimens from Italy. Presented by Charles Civita.
165. The same from the Philippine Islands. Presented by Theodore Müller.
166. Cat-tail stems as prepared by the Pima Indians, of the western United States, for basket-making. Presented by D. T. MacDougal, 1902.

Pandanus Products

Pandanus, or Screw-pine, is a genus of plants in the *Pandanaceae*, or Screw-pine family, native of tropical regions and very largely employed in textile work. The tough leaves are employed, after removing their sharply-toothed edges, either entire or after being cut up into strips.

167. Pandanus matting.—Woven from the leaves of an undetermined species of *Pandanus* from the Philippine Islands. Presented by F. A. Pacher.
168. Pandanus broom.—Made from the leaves of *Pandanus utilis* Bory, by the natives of Madagascar. Deposited by Columbia University.

169. Majayjay pandan.—Strips from the leaves of the same, used by the natives of the Philippine Islands for making mats and baskets. Presented by Theodore Müller.
170. Keora.—Fiber from the leaves of *Pandanus odoratissimus* L. f. Native of India and Africa. Used for making brushes, for painting and whitewashing, and for baskets. From India, through the Philadelphia Museums.
171. Kara-gumoy.—Strips from the leaves of *Pandanus simplex* Merrill. Used by the natives of the Philippine Islands. Presented by Theodore Müller.
172. Sabutan.—Strips from the leaves of *Pandanus Sabotan* Blanco. Used by the natives of the Philippine Islands. Same donor.
173.[6] Pandan laut.—The leaves of *Pandanus fascicularis* Lam., from which the marginal teeth have been removed. From the Island of Singkep.
174. Strips cut from Pandan laut.
175. A bundle of such strips.
176. Pisau.—The knife or machete used in cutting pandan leaves from the plant.
177. The knife used in slitting the leaves into strips of uniform size.
178. Bamboo instrument used in flattening and softening the strips.
179. Unfinished mat made of Pandan laut strips.
180. The same finished.
181. Pandan djakas.—The leaves of an undetermined species of *Pandanus*.
182. Strips cut from Pandan djakas.
183. Unfinished mat of Pandan djakas.
184. The same finished.
185. Three coarse mats of Pandan djakas leaves, used for sides of houses, awnings, and sails.
186. Pandan tikar.—The leaves of *Pandanus Samak* Hassk. with the marginal teeth removed. This is the best variety of Pandan. It is used for making soft mats, hats, baskets, and in other fine work. This and its products are from Singkep Island.
187. Strips cut from Pandan tikar.
188. Half finished mat made of the preceding.
189. Two sleeping mats of poor quality, made of a single layer of the same.
190. Two of the same, of somewhat finer quality.
191. The same, in fancy colors. Acquired by R. S. Williams in Manila, in 1901.
192. Two of the best quality of the same made of a double layer of strips, in their natural colors.
193. Two of the same made, in part, of dyed strips.
194. Two of the same of different colors and patterns.
195–203. Nine egg baskets made of Pandan tikar.
204–207. Four fruit bags of the same.
208. Bakal-gila basket (crazy basket).—A sort of work-basket of Pandan tikar used by Malay women.
209. Unfinished money-bag of Pandan tikar.
210–213. Four of the same, finished.
214–215. Two different styles of the same, unfinished.
216–218. Three of the same, finished.

[6] Numbers 173–225 were obtained in the East Indies, in 1901, by Mr. Percy Wilson.

219–220. Two covered baskets made of Pandan tikar.
221. Unfinished belt-bag, used for carrying betel nuts and tobacco.
222. The same, finished.
223. The same of a different style.
224–226. Three covers, for protecting food against insects, made of Pandan tikar.
227. Fruit-basket of Pandan tikar.
228. Menkuang.—The leaves of *Pandanus atrocarpus* Griffith, in their natural state. This and its products are from Singkep Island.
229. Strips cut from Menkuang leaves.
230–231. Two coarse mats made from the preceding.
232. An unfinished, finer mat of the same.
233. The same, finished.
234–235. Sheets made from entire leaves of Menkuang, used for screens, sails, sides of houses, etc.
236. Unfinished money-bags used by Malays for carrying copper coins.
237. The same, finished.
238. The same, of finer quality.
239–241. Three coarse hats for women, made of Menkuang.
242. The same, for men, ornamented with resam fiber.
243. Unfinished, coarse, covered clothes hamper, made of Menkuang.
244–246. Three of the same, finished.
247. Ornamented form of the same.
248. Unfinished, coarse, covered work-basket made of Menkuang.
249. The same, finished.
250–251. The same, with cover.
252–254. Finer quality of the same, ornamented. From the island of Malacca.

255. Eel-grass.—The stems and leaves of *Zostera marina* L. (*Naiadaceae*—Eel-grass Family). Native of Atlantic and Pacific coasts.
256. Sheathing made of eel-grass.—Used for screens. Donated by Samuel Cabot, of Boston, Massachusetts.

THE GRASS FAMILY[7] (*Gramineae*)

257. Corn stalks in fruit.—The stalks of *Zea Mays* L. Native of tropical America and everywhere cultivated, except in cold countries.
258. Corn-tassels.—The staminate or male inflorescence of the same plant.
259. Corn husks.—The leafy covering of the ears or fruits of corn.
260. Hat braid made from corn husks.—Made by the natives of New Providence, Bahama Islands. Donated by Mrs. N. L. Britton.
261. Corn cobs.—The rachis from which the grain has been removed.
262. Corn feathers.—The chaff or scales cut from the surface of corn cobs. Donated by W. H. Gregg, of North Topeka, Kansas.
263. Pillow stuffed with corn feathers.—Same donor.
264–271. Samples of broom corn.—The tops or inflorescence of a variety of *Holcus Sorghum* L., developed by selection and breeding for its value in broom-making. Native of Old World tropics and widely cultivated. Other

[7] Headings of this kind are used where there are several exhibits belonging to the same family.

varieties of this species have been developed in the same way for their value, respectively, for yielding sugar and food grain. For broom-making, a long, tough, fibrous, branching top is required. With the exception of No. 180, the samples were donated by George Josephie of New York City.

264. Broom corn bearing the seeds. Donated by Martin Bell.
265. The same, with the seeds removed, ready for broom-making. Grown in Kansas.
266. Dwarf Kansas broom corn.
267. The same, grown in Oklahoma.
268. The same, grown in Illinois.
269. The same, grown in Peru.
270. The same, grown in Hungary.
271. The same, grown in Italy.
272–273. Samples of brooms made of broom corn.
274. Vetiver (in wall-case).—The fibrous roots of *Andropogon zizanioides* Urban. Native of the Old World tropics. Presented by Theodore Müller.
275. Fibrous strips from the stem of the same plant.
276. Rice roots.—Said to be the cleaned, tough, fibrous roots of the rice plant (*Oryza sativa* L.). Native of eastern Asia and widely cultivated for its grain. Used in broom-making. Obtained in the New York market and presented by H. H. Rusby.
277–278. Rice brushes.—Made from the tops or inflorescence of the rice plant after the removal of the grain. Used by the Javanese natives. Acquired in Buitenzorg, Java, by Percy Wilson, in 1901.
279. Rice straw.—The stems of the same plant. From the Philippine Islands. Presented by Theodore Müller.
280. Rice straw rope.—Made from the bast-fibers of the stems of the rice plant. From Japan.
281. Esparto.—The stems of *Stipa tortilis* Desf. Native of northern Africa and the Iberian Peninsula. Used for making bags, mats, ropes, etc. From Spain.
282. Basket made of the leaves of *Sporobolus floridanus* Chapman. Native of Georgia and northern Florida. From Sumpter County, Georgia. Donated by Roland M. Harper.
283. Indian sweet grass. Vanilla grass. Seneca grass.—The stems and leaves of *Savastana odorata* (L.) Scribner. Native of northeastern North America. This grass contains coumarin and is used by the Indians of North America in making perfumed baskets and other objects.
284. Indian basket made in part of the preceding.
285. Sweet vernal or vanilla grass.—The stems and leaves of *Anthoxanthum odoratum* L. Native of eastern North America. Contains coumarin and is used like 283.
286. Raiz de Zacaton.—The cleaned roots of *Epicampes Macroura* Benth. Native of high plains of Mexico. Used for brush-making. Presented by J. N. Rose.
287. Brush made of Esparto.—Same source and donor.
288. Cogolla.—The leaves of *Gynerium sagittatum* (Aubl.) Beauv. Native of tropical America. From Venezuela.
289. Arundo splints.—The split stems of *Arundo Donax* L. Native of tropical regions. Used in Mexico for basket-making. Presented by J. N. Rose.

290. Smaller Arundo splints.—Same source and donor.
291. Basket made of Arundo splints.—Same source and donor.
292. Another form of same.
293. Basket made of an undetermined species of "Sea-Island grass." Made by negroes near Charleston, South Carolina. Presented by N. L. Britton.
294. Tambo. Blue bent.—The inflorescence of *Phragmites Phragmites* (L.) Karst. Native of swamps throughout most of the world. From the Philippine Islands. Presented by Theodore Müller.
295–296. Brushes made from the preceding. Also used as fans. Acquired in 1903, in the Philippine Islands, by R. S. Williams.
297. Plaited fibers from stem of same plant. Used in hat-making. From Bohemia.
298. Bamboo stems.—The stems of *Bambusa Blumeana* Schult. f. Native of the Old World tropics. From the Philippine Islands. Presented by Theodore Müller.
299. Splints from above stems.
300. Splints from inner sheath of same.
301. Section of stem of bamboo.
302. Splints made of split stems of bamboo.
303. Fish trap made of bamboo splints. Probably from *Bambusa vulgaris* Wendl. Native of tropical regions. Made and used by the negroes of Haïti, West Indies. Acquired in Haïti by George V. Nash in 1905.
304[8]–305. Baskets used for keeping fish alive when suspended in water. Made of a bamboo called in Java "Bamboe-apoes."
306–307. Scoop-panniers made from same material. Used for carrying stones and other heavy articles.
308–309. Coarse strainers made from same.
310–311. Similar sieves, of medium fineness.
312–313. Two of finest quality.
314–315. Ordinary hat for men, made of two frames of same splints, with leaves between.
316–321. Ornamental hats for women, made from same, and painted. Worn by Javanese women.
322–324. Double-layer hats of same, for men, the coarse splints inside, the finer outside.
325. A fine quality of same.
326. The same, with ornamental coloring.
327. A still finer quality of same.
328. A plain hat for men, of finest quality.
329. Strips used in making hats in the Philippine Islands. Presented by C. B. Robinson.
330. A fine hat made by the Philippine Island natives from bamboo splints. Same donor.
331. A bamboo sieve, used for washing rice.
332–333. Trays made of same.
334. Fruit-basket made of same.
335–336. Other forms of same.

[8] The following series of bamboo products with the exception of 329 and 330, were acquired in Buitenzorg, Java, by Percy Wilson, in 1901.

337. Very large basket, used to carry fruit and vegetables.
338. Clothes hamper, with cover.
339–340. Fire-fans, used to fan a charcoal fire.
341–342. Rice baskets of bamboo, from which the Javanese eat their rice at the table.
343. Ornamental painted food-baskets, used to carry food on a journey.
344. Ornamental painted work-basket.
345. Cigarette wrappers made from sections of bamboo leaf with the lower epidermis removed.

THE SEDGE FAMILY (*Cyperaceae*)

346. Snow-shoe made of the fiber of the Tule, *Scirpus validus* Vahl. Native of North American swamps. Made by the Klamath Indians of Oregon.
347. Mexican soplador or fire-fan.—Made of a species of *Scirpus*. Acquired in Mexico, in 1901, by J. N. Rose.
348. Model of balsa or canoe used on the southern portion of Lake Titicaca, Bolivia. These balsas are made wholly of the stems of *Scirpus riparius* Presl., growing in the lake. Acquired by R. S. Williams.
349. Balangot.—The straw of *Cyperus malaccensis* Lam. Native of the Philippine Islands. Presented by Theodore Müller.
350. Tayoc.—The straw of *Fimbristylis diphylla* Vahl. Same source and donor.
351. Tikug.—The straw of a species of *Fimbristylis*. Same source and donor.
352. The straw of an undetermined sedge. Native of the northwestern United States. Much used as a textile fiber. Presented by the Northwestern Grass and Twine Co., of St. Paul, Minnesota.
353. Rope made from same. Same donors.
354. Samples of material from same, used for making rugs. Same donors.
355–356. Rugs made from same. Same donor.
357–358. Cushions made from same. Same donor.

THE PALM FAMILY (*Palmae*)

359. Ornamental palm branch.—A leaf of the date-palm, *Phoenix dactylifera* L., split and braided. Native of northern Africa and cultivated in all tropical countries for its fruit. Leaf used in the Coptic churches of Cairo, Egypt, in 1893. Presented by Miss Anna Murray Vail.
360. Another form of same.
361. Cross made of same leaf.—Used in the churches of Athens on Palm Sunday in 1893. Same donor.
362. Egyptian fire-fan made from the same.—Purchased at Assiont, Egypt, in 1893, by the same donor.
363. Another form of same.
364. Ornamental basket made from same leaf.—Made at Esneh and Asinan, Upper Egypt. Same donor.
365. Velvety coating of leaf-sheaths of *Thrinax parviflora* Sw. Native of West Indies. Used for stuffing pillows and cushions. Acquired in Cuba and donated by Mrs. N. L. Britton.
366. Thrinax broom.—Made of the leaf-blades of *Thrinax keyensis* Sarg. Native

of Florida Keys and the Bahama Islands. Acquired at Inagua, Bahamas, by G. V. Nash and Norman Taylor in 1904.

367. Thrinax rope.—Made from the leaf-fibers of a species of *Thrinax*. Native of the West Indies. Acquired by G. V. Nash at Palate, Haïti, in 1905.

368. Thrinax bag. Made of the leaflets of a palm, probably a *Thrinax*. Native of the West Indies. Acquired by G. V. Nash at Palate, Haïti, in 1905.

369–370. Latanier hats.—Made from the leaf-fibers of a West Indian species of *Thrinax*. Obtained by G. V. Nash in Haïti, in 1905.

371. Silver-thatch rope.—Made from the leaf-fibers of thesilver that ch palm. *Coccothrinax argentea* (Lodd.) Sarg. Native of tropical America. Acquired by N. L. Britton, at Cat Island, Bahamas, in February, 1907.

372. Palm basket.—Made of the leaves of the same plant. Acquired at Whitelands, Cat Island, Bahamas, by Britton and Millspaugh in February, 1907.

373. Leaf strips of the same plant. Native of Florida and the Bahamas. Acquired at Bimini Cays, Bahamas, by M. A. Howe, in 1904.

374. Braid made from the preceding. Same source and donor.

375. Hat made from the preceding. Same source and donor.

376. The leaflets of a species of *Coccothrinax*. Acquired by J. A. Shafer at Holguin, Cuba, in April 1909.

377–378. Daraguano rope, of two sizes. Made of the fibers of the preceding. Same source and donor.

379. Buri palm hat.—Made of strips from the leaves of the Buri palm, probably *Corypha elata* Roxb. Native of eastern Asia. Acquired at Balinag, province of Bulican, Luzon, Philippine Islands, by C. B. Robinson, where it is largely used in making many articles.

380. Buri.—Strips cut from the preceding. Acquired in the Philippine Islands and presented by Theodore Müller.

381. Buri raffia.—Raffia made from the same leaves. Same source and donor.

382. Calasiao splints.—Splint from the leaf-stem of the same plant. Same source and donor.

383. Buntal.—Fiber prepared from the same leaves. Same source and donor.

383.1–383.4. Palmetto brushes.—Made from the stems of *Sabal Palmetto* (Walt.) R. & S. Native of the southeastern United States. Acquired in Miami, Florida, by J. K. Small.

383.5. Rope made from the same. From Watling Island, Bahamas.

383.6–383.7. Mexican sopladores or fire-fans.—Made from the leaf-fiber of a species of *Sabal*. Native of Mexico. Acquired in Mexico by J. N. Rose in 1901.

383.8–383.9. Palmetto fans.—Made from the leaves of the dwarf palmetto, *Sabal glabra* (Mill.) Sarg. Native of Florida. Acquired in Miami, Florida, by Mrs. N. L. Britton, April, 1903.

383.10. Palm-leaf braid.—Made from the leaves of *Sabal Blackburniana* Glazebrook. Native of Bermuda. Acquired at Harrington Sound, Bermuda, and presented by Miss Rose Wilkinson, in 1912.

383.11. The same, presented by N. L. Britton.

384–386. Unfinished hats of palm leaves.—Made of the leaves of *Sabal causiarum* (O. F. Cook) Beccari. Native of Porto Rico, West Indies. Acquired by Percy Wilson, in 1902.

387. Ornamental palm basket.—Woven from the leaf-fibers of a species of *Sabal*,

native of western Mexico. Acquired in Mexico in 1901, and presented by J. N. Rose.

388–390. Mexican toys made from the same. Same source and donor.

391–394. Palmetto brushes.—Made from the stems of *Serenoa serrulata* (Michx.) Hooker f. Native of the southeastern United States. Presented by Felix Hentze.

395. Raphia stems.—Portions of the stem of *Raphia vinifera* Beauv. Native of tropical Africa. From Liberia, through the Philadelphia Museums.

396. Raphia fiber. From same source and donor.

397. African Piassaba fiber.—From the leaves of the preceding. Same source and donor.

398. Attaps shingles. — Made from the leaflets of the sago palm, *Metroxylon Sagu* Rottb. Native of the East Indies. Acquired on Linga Island by Percy Wilson, in 1901.

399. Yarey leaf fiber.—The product of an undetermined species of *Copernicia*. Acquired by J. A. Shafer at Holguin, Cuba.

400–401. Yarey brooms.—Brooms made of the above fiber. Same source.

402. Rattan stems.—The stems of *Calamus Rotang* L. Native of the Old World tropics. Acquired by Percy Wilson at Johone, Malay Peninsula, in 1901.

403. Rotan-Kora basket.—A rough basket made of the stems of *Calamus heteroideus* Blume. Native of the East Indies. Acquired by Percy Wilson at Buitenzorg, Java, in 1901.

404. Rattan stems.—From *Calamus mollis* Blanco. From the Philippine Islands. Presented by Theodore Müller.

405. Rattan splints. — Split from the stems of the preceding species. Same source and donor.

406–407. Rattan scoops.—The body of bamboo, the border of strips from preceding stems. Same source as last. Acquired by Percy Wilson.

408. Rattan sticks.—The stems of a species of *Calamus*. Native of the East Indies. Used in furniture making. Presented by Bennache Bros., of New York City.

409–412. Other varieties of the same. Same donor.

413–416. Four samples of the same, presented by Leopold Thomas, of New York City.

417–422. Six forms of same, used for demijohns. Same donor.

423–426. The same split into oval forms. Used in baskets and furniture. Same donor.

427–428. The same, split into flat forms. Same donor.

429. Rattan pelado.—The peeled stems of a species of *Calamus*. Native of the East Indies. Used in making baskets. Acquired by Percy Wilson at Buitenzorg, Java, in 1901.

430. Unfinished basket made of the preceding. Same source.

431. The same, finished. Same source.

432. Kabung. The fiber of the leaflets of the sugar palm, *Arenga saccharifera* Labill. Native of the East Indies. Same source.

433. Malay writing pens. Made from the fibro-vascular bundles of the preceding palm. Same source.

434. Kabung rope.—A very durable rope, made from the leaf-fibers of the same plant. Same source.

435. Sugar palm splints.—Split from the leaf-stalks of the preceding palm. From the Philippine Islands. Presented by Theodore Müller.
436. Sugar palm fiber.—Fibers taken from the preceding splints.
437. Tipon-tipon. Splints split from the stems of *Arenga mindorensis* Beck. Same source and donor.
438. Nipa fiber.—The leaves and midrib of *Nipa fruticans* Wurmb. Native of the Philippine Islands. Presented by Theodore Müller.
439. Piassaba fiber.—Fiber from the leaves of *Leopoldinia Piassaba* Wallace. Native of Brazil. Specimens from Para, Brazil.
440. Catechu sheaths.—From the leaf-sheaths of *Areca Catechu* L. Native of tropical Asia. From the Philippine Islands. Presented by Theodore Müller.
441. Coconut sheaths.—The sheaths surrounding the leaf-bases of the coconut palm, *Cocos nucifera* L. Native of the tropics and cultivated in all tropical and subtropical regions. Acquired by Charles L. Pollard at Key West, Florida, in 1901.
442–448. Coconut palm brooms.—Made of the midribs of the leaflets of the same. Acquired by Percy Wilson on Singkep Island, in 1901.
449–456. Coconut door-mat exhibit.—This series was presented by James Sloan's Sons, of New York City.
449. Coconut husks.—The outer fibrous portion of the pericarp of the coconut, with the coconut shell (inner portion of pericarp) still in place.
450. The crude fiber taken from coconut husks.
451. The same selected and picked, ready for spinning.
452. Spun coconut fiber, ready for weaving.
453. Coco-yarn.—The above fiber twisted into yarn, ready for mat-making.
454. Coco-braid.—Used in the margins of the mats.
455–456. Finished door-mats of the above fiber.
457. Coir rope.—Made from the same fiber by the natives of India. From the Philadelphia Museums.
458. The same made by the natives of Singkep Island, acquired by Percy Wilson, in 1901.
459. The same from the Philippine Islands, presented by Theodore Müller.
460. Coconut leaflets. Same source as preceding.
461. Coconut leaf midribs. Same source as preceding.
462. Corojo fiber.—A coarse fiber from the leaflets of *Acrocomia sclerocarpa Wallaceana*. Native of the West Indies. Obtained by J. A. Shafer, in the province of Santa Clara, Cuba, in March, 1912.
463. A finer form of the same used for cordage and belts. Same source and donor.
464. A surcingle made from the preceding. Same source.
465. Desmoncus stems.—The split stems of a species of *Desmoncus*. Native of tropical America. Grown in Guatemala. From the Philadelphia Museums.
466. Split leaves of an undetermined palm. Grown in Java. From the Philadelphia Museums.
467. Mexican soplador or fire-fan.—Made from the leaves of an undetermined palm, collected in the City of Mexico and presented by Mrs. N. L. Britton.

THE PANAMA HAT-PALM FAMILY (*Cyclanthaceae*)

468. Coarse Panama straw.—Coarse strips cut from the leaves of *Carludovica jamaicensis Lodd.* Native of Jamaica. Used in hat-making. Presented by William Fawcett, October 4, 1902.
469. Fiber split from same. Same source and donor.
470. A finer quality of the same. Same source and donor.
471. An unfinished Panama hat made from the same. Same source and donor.
472. Panama straw.—From the leaves of *Carludovica palmata* R & P. Native of Central and South America. From Guatemala. Presented by the Philadelphia Museums.
473. Carludovica leaf fiber. Deposited by Columbia University.
474. Jipijapa fiber. Another specimen of the preceding. From the Field Museum of Natural History.
475–477. The same, bundled ready for marketing. Same donor.
478. The same from Peru. From J. J. Crooke, through Columbia University.
479. Beginning of a Panama hat. Presented by T. Salraacler.
480. Air roots.—The aerial roots of a plant in the Araceae or Arum family. Native of the Philippine Islands. Presented by Theodore Müller.

THE PINEAPPLE FAMILY (*Bromeliaceae*)

481. Pineapple-leaf fiber.—From the leaves of the pineapple plant, *Ananas Ananas* (L.) Lyons. Native of Brazil and cultivated in all warm countries. Grown in Siam. From the Philadelphia Museums.
482. The same, from the Philippine Islands. Presented by Theodore Müller.
483. Pinguin fiber.—From the leaves of *Bromelia Pinguin* L. Native of the West Indies. Deposited by Columbia University.
484. Caraguata fiber.—From the leaves of a species of *Caraguata.* Native of Paraguay and adjacent Argentina. From Argentina, through the Philadelphia Museums.
485. Florida moss.—The entire plant of *Dendropogon usneoides* (L.) Raf. Native of tropical America. Used for stuffing mattresses. From Florida, through the Philadelphia Museums.

THE RUSH FAMILY (*Juncaceae*)

486. Rush stems.—The stems of *Juncus effusus* L. Native of the northern hemisphere. From California. Presented by the Goodall Matting Co., of Kennebunk, Maine.
487. The same, grown under cultivation in Japan. Same donor.
488. Matting made from the preceding. Same donor.

THE LILY FAMILY (*Liliaceae*)

489. Xerophyllum leaves.—The leaves of *Xerophyllum tenax* Nuttall. Native of the western United States. Acquired in California and presented by Valery Harvard.
490. Fancy hat made from the preceding and ornamented with the lustrous fibers of *Adiantum pedatum* L. and the reddish fibers of *Woodwardia radicans* (L.)

J. E. Smith, the bottom composed of the bast fibers of *Pinus Sabiniana* Dougl. Made by the Hoopa River Indians of northern California. Presented by Valery Havard.

490.1–491. Soap-plant brushes.—Composed of the fibrous leaf-bases surrounding the bulb of *Chlorogalum pomeridium* (Ker.) Kunth. Native of California. Deposited by Columbia University.

492. New Zealand hemp.—Fibers from the leaves of *Phormium tenax* Forst. Native and cultivated in New Zealand. Presented by Travers Bros., of New York.

493. New Zealand binder twine. Made from the preceding and used for binding sheaves of grain. Same donor.

494. Spanish bayonet leaves.—The leaves of *Yucca baccata* Torrey. Native of the southwestern United States and Mexico. Used in making cordage, mats, and baskets. Collected by J. S. Newberry, in Mexico, in 1882.

495. Yucca pin-cushions.—Made from the stems of a species of *Yucca*. Native of Florida, obtained in 1899, by N. L. Britton.

496. Beach fiber.—The fiber from the leaves of *Acyntha guinensis* (Jacq.) Medic. (*Haemodoraceae*—Bloodwort Family). Native of tropical Africa. From the Philadelphia Museums.

497. Another sample of the same. Same donor.

498. Pangana hemp.—From the leaves of *Acyntha Kirkii* (Baker) Rusby, n. comb. Native of east-central Africa. From plants cultivated in Trinidad.

499. Acyntha leaves.—The leaves of a species of *Acyntha* of tropical Africa. From Nairobi, eastern Africa, through the U. S. Dept. of Agriculture.

500. Bear-grass leaves.—The leaves of *Nolina texana* (Torr.) S. Watson (*Dracaenaceae*—Dragon's-tree Family). Deposited by Columbia University.

501. Dasylirion leaves.—The leaves of *Dasylirion texanum* Scheele. Same family, locality, and donor.

THE AMARYLLIS FAMILY (*Amaryllidaceae*)

502. Hennequen fiber.—Fiber from the leaves of *Furcraea foetida* (L.) Haw. Native of Mexico. From San Luis Potosi, Mexico, through the Field Museum of Natural History.

503. Pita floja. From Guatemala. Same donor.

504. The same in commercial bundles. Same donor.

505. Mauritius fiber.—The fiber of the same plant, usually mixed with sisal and Manila hemp in making medium grades of cordage. Presented by the U. S. Dept. of Agriculture.

506. Scouring brush.—Made of the leaf-base of *Agave vivipara* L. Native of Mexico and used throughout that country for scouring. Presented by J. N. Rose.

507. Sisal hemp leaves.—The leaves of *Agave rigida sisalana*. Native of and cultivated in tropical regions. Obtained in the Bahama Islands, in 1902, by S. H. Hamilton.

508. Fiber from the preceding. Same source and donor.

509. Yucatan sisal.—Fiber from the leaves of *A. rigida elongata*. Native and cultivated in Yucatan. Presented by the U. S. Dept. of Agriculture.

510. Sisal spun yarn.—Made from the preceding. Presented by Travers Bros., of New York.
511. Sisal binder twine. Binder twine made from the preceding. Same donor.
512. Sisal rope, ¼ inch diameter. Made from the same. Same donors.
513. Ixtle sisal leaves.—The leaves of *A. Ixtle* Karw. Native and cultivated in Central America. Deposited by Columbia University.
514. Ixtle sisal fiber.—Fiber from the preceding. Presented by Hugo Brussel & Co., New York City.
515. Agave Schottii leaves.—The leaves of *Agave Schottii* Engelmann. Native of the southwestern United States. Collected in Arizona, in 1881, by C. G. Pringle.
516. Jaumave Ixtle sisal.—From the leaves of *Agave lophanthus* Schiede. Native of Mexico. Used in the making of cheap grades of cordage and for mixing with other kinds of sisal. From Tamaulipas, Mexico, through the U. S. Dept. of Agriculture.
517. Pulque maguey fiber.—From the leaves of *Agave atrovirens* Karw. Native and largely cultivated in Mexico. Obtained at Serma, Mexico, in 1901, by J. N. Rose.
518. Agave rope.—From the leaf-fiber of *Agave Lechiguilla* Torrey. Native of the southwestern United States and Mexico. Obtained at Langtry, Texas, by W. H. Dodd.
519. Letchuguilla rope.—Made of the leaf-fiber of *Agave heteracantha* Zucc. Native of the southwestern United States and Mexico. Obtained by J. S. Newberry.
520. Bag made from the preceding. Same donor.
521. Maguey fiber.—The leaf-fiber of *Agave cantula* Roxb. From the Philippine Islands. Presented by Theodore Müller.
522. Mexican spindle, used in twisting Agave fiber. Presented by J. N. Rose.
523. Guatemala pita fiber.—The leaf-fiber of a Guatemalan species of *Agave*. From the Philadelphia Museums.
524. Mexican maguey fiber.—From a Mexican species of *Agave*. Same donor.
525. Haytien sisal.—The leaf-fiber of a Haytien species of *Agave*. Presented by Hugo Brussel & Co., of New York City.
526. White Haitien sisal. Same source and donor.
527. Bahama sisal fiber. Obtained in the Bahama Islands and presented by Miss Harriet L. Britton.
528. Tula or Central American sisal. Presented by Hugo Brussel & Co., of New York City.
529. Maguey rope fiber.—Rope made of Maguey fiber in Sonora, Mexico. Presented by D. T. MacDougal in 1902.
530. Sisal rope.—Made of sisal fiber at Long Cay, Bahama Islands. Presented by Mrs. N. L. Britton, in 1904.
531. Bag made of the leaf-fiber of a species of *Agave*. Obtained in Mexico and presented by J. N. Rose.
532. A fine bag made of the same in the Department of Tolima, Colombia. Presented by F. S. Alexander, of New York City.
533. Colombian alpagates.—Sandals made from the leaf-fiber of a species of *Agave*, at Tolima, Colombia. Same donor.

534. Letchuguillas.—Hair stirrers made from the stem of a species of *Agave* and used by the Mexican natives. Acquired in 1901 by J. N. Rose.
535-536. Coarser forms of the same. Same source and donor.
537. Another sample. Presented by Mrs. N. L. Britton.

538. Iris fiber.—From the leaves of *Iris macrosiphon* Torrey. (*Iridaceae*—Iris Family). Native of California, and used by the Indians about Ft. Gaston in making baskets and rugs. Obtained by Valery Havard, Aug. 4, 1880.

THE BANANA FAMILY (*Musaceae*)

539. Abaca or Manila hemp.—A hard fiber made from the leaf-sheaths of the Abaca plant, *Musa textilis* Neé. Native of the Malay region. Used in making heavy rope and better grades of twine. Presented by the U. S. Dept. of Agriculture.
540. The same, from the Philippine Islands. Presented by Theodore Müller.
541. Another sample of same. Same donor.
542. The same, from the Philadelphia Museums.
543. The same, from Travers Bros., of New York City.
544. Manila rope. Made of the preceding fiber. Same donor.
545. Manila binder twine. Binder twine made from the same fiber. Same donor.
546. Manila rope, 2 inches in diameter, from same. Same donor.
547. Drilling cable from same. Used in oil-well and other drilling. Same donor.

548. Maranta fiber hat.—Its outer layer made of the split stems of *Clinogyne dichotoma* (Roxb.) Benth. (*Marantaceae*—Arrow-root Family.) Native of the East Indies.
549. Trao fiber.—The fiber of the leaves of *Dendrobium crumenatum* Sw. (*Orchidaceae*—Orchid Family.) Native of the Philippine Islands. Presented by Theodore Müller.
550. Willow strips.—From the outer portion of the stems of a species of *Salix* or willow (*Salicaceae*—Willow Family). Native of the southwestern United States. Used by the Pima Indians in basket making. Acquired in Arizona in 1902 by D. T. MacDougal.

THE MULBERRY FAMILY (*Moraceae*)

Hemp and Its Products

Hemp is the bast-fiber of the bark of the stem of *Cannabis sativa* L. native of Asia and widely cultivated for various purposes. This variety has been developed for the special value of its fiber. The stem is put through a variety of processes which break up and remove the central cylinder of woody tissue and which combs and shakes out the outer bark and other cellular portions. The fiber then remaining is still further cleaned and carded into its fine strands, which can be spun into yarn, used in the manufacture of twine, rope, bags, nets, matting and many similar articles.

551. Crude hemp fiber. Presented by the United States Department of Agriculture.
552. American-grown Italian hemp. The Italian strain of hemp, grown in the United States. Same donor.
553.[9] American hemp.
554. Carded American tow. The preceding, carded into form for spinning.
555. Italian-grown hemp.
556. The same, carded.
557. Russian-grown hemp.
558. Four-ply soft sewing twine, made from American hemp.
559. Carpet-yarn from American hemp.
560. Bell-cord, made from dark American hemp.
561. Packing, 1 inch in diameter, made from the same.
562. Finished commercial twine made from same.
563. The same, of different sizes.
564. Packing, 1 inch in diameter, made of light-colored Italian hemp.
565. Carpet-yarn, made from light Italian hemp.
566. Sewing twine, made from the same.
567. Bleached sash cord, made from the same.
568. Commercial twine, made from the same.
569. Trumpet-tree bark.—The inner bark of *Cecropia peltata* L. Native of tropical America. Used in rope-making. Obtained at New Market, Jamaica, and presented by N. L. Britton.
570. Rope made from the preceding. Same source and donor.
571. Cucanillo.—The inner bark of *Castilla elastica* Cerv., the Central American rubber-tree. Native of Central America, and cultivated for its rubber. From Guatemala through the Philadelphia Museums.
572. Bark cloth.—The prepared inner bark of *Ficus saxophila* Blume. Native of eastern Asia, and used by the natives for clothing. From the Philippine Islands. Presented by Paul Müller of New York City.
573. Paper mulberry bark fiber.—Fiber from the inner bark of *Papyrius papyrifera* (L.) Kuntze. Native of Asia and cultivated. Used in paper-making. From Japan, through the Philadelphia Museums.
574. Tapa.—Cloth made from the preceding. Obtained in Honolulu, and presented by Miss W. J. Robinson.
575. Samoan tapa.—The same made in Samoa. Same donor.

THE NETTLE FAMILY (*Urticaceae*)

576. Ramie stems.—The stems of *Boehmeria nivea* (L.) Gaud. Native of southern and eastern Asia and cultivated in tropical countries for its fiber, which makes fabrics much resembling linen in appearance, strength, and durability.
577. Ramie fiber. The bast-fiber from the preceding. From China, through the Philadelphia Museums.
578. The best Japanese variety of ramie, grown in India. Same donor.

[9] Numbers 553–569 comprise a series representing hemp and its manufactured products, presented by Travers Bros., of New York City.

579. The same from Japan, same donor.
580. Second quality of same, grown in India. Same donor.
581. Ramie fiber, cleaned and ready for spinning.
582. Stems of the stinging nettle, of India.—*Girardinia heterophylla* Decne. Native of India. Obtained at Jorepokri, near Darjeeling, India, by C. William Beebe, as were the twelve following.
583–584. The crude fiber removed from the preceding.
585. The same, partially cleaned and bleached.
586. The same, more perfectly cleaned and bleached.
587. The same, dyed red.
588. The same, dyed blue.
589. Stems of the non-stinging nettle of India.—*Pouzolzia viminea* Wedd.
590. The crude bast-fibers removed from the preceding.
591. The same, cleaned and bleached.
592. The same, dyed red.
593. The same, dyed blue.
594. The same, dyed green.
595. The same, dyed yellow.

596. Pamago.—The stem of *Pericampylus incanus* Miers. (*Menispermaceae*—Moonseed Family). From the Philippine Islands. Presented by Theodore Müller.
597. Maljan.—The fibrous bark of *Bauhinia Vahlii* Wight & Arnott. (*Caesalpiniaceae*—Senna Family). Native of India. From the northwestern provinces of India, through the Philadelphia Museums.
598. Bast-fibers from the preceding. Same donor.
599. Bark cloth.—Made by soaking, pounding, and softening the inner bark of a species of *Brachystegia*. Same family. Native of Africa. Obtained in Uganda, Africa, and presented by Paul Müller, of New York City.
600. Another specimen of same. Same source and donor.
601. Guama rope.—Made from the bast-fibers of *Lonchocarpus domingensis* (Pers.) DC. (*Fabaceae*—Pea Family). Native of the West Indies. Obtained at Pinar del Rio, Cuba, by J. A. Shafer, in 1912.

The Flax Exhibit

The flax plant is *Linum usitatissimum* L. of the *Linaceae*, or flax family, native of Europe and Asia. It is cultivated in all temperate regions for its seed and fiber. There are two distinct strains of the plant, one specially adapted to each of these uses. Fiber flax, when mature, is either pulled up by the roots and the roots cut off, or it is cut as closely as possible to the ground. The weeds are then separated by hand, after which the seed is stripped off. The stems are then submerged in water for a long time, to allow the softer parts to decay and soften, this process

being known as "retting." The retted stems are then passed through the breaker, which breaks the woody central portion up into short pieces. The next process is "scutching," mostly done by hand, but sometimes by a machine. By this process the wood and soft tissues are beaten and shaken out of the fiber, which can then be combed and carded ready for bleaching or spinning into yarn or thread.

602. Flax straw, bearing its pods. From Manitoba, Canada, through the Philadelphia Museums.
603. Flax fiber made from preceding. Same source.
604. The same, presented by the U. S. Dept. of Agriculture.
605. The same, deposited by Columbia University.
606.[10] Flax straw bearing its pods.
607. Rough flax fiber.—The rough fiber of the stems after retting, breaking, and scutching.
608. Dressed linen, of natural color.
609. Linen tow or combings.—The shorter fibers combed out from the crude fiber.
610. Rover flax.—Fine fiber ready for spinning.
611. Spinners flax waste.—Waste matter removed from the fiber in spinning.
612. Flax yarn.—The spun fiber wound on spools.
613. Gray twist.—The bleached and twisted thread.
614. The same, dyed black.
615. Flax yarn.—Rover flax spun into yarn.
616. Twisted yarn, of natural color.
617. Satin finish black linen thread.
618. Irish flax thread of natural color.
619. Best Irish thread, ready for dyeing.
620. The same, dyed yellow.
621. Linen harness thread.—A coarse but strong thread used for sewing harness.
622. Crochet and lace thread.—Used for crochet work and in lace making.
623. White machine thread.—Ready for use in sewing-machine.
624. Black machine thread.
625–634. Linen worsted floss, of various colors, used in ornamental work.

635. Papago Indian basket.—Made from the prepared stems of *Jatropha canescens* Muell. Arg. (*Euphorbiaceae*—Spurge Family). Native of North and Central America. Obtained at Torres, Sonora, Mexico, in 1902, by D. T. MacDougal, where it is called "Sangre en Gordo."
636. Cyrilla bark.—The bark of a species of *Cyrilla* (*Cyrillaceae*—Cyrilla Family). Native of Cuba. Acquired by J. A. Shafer, in the province of Oriente, Cuba, in December, 1910.
637. Crude bast-fiber from the preceding. Same source and donor.

[10] Numbers 606–625 illustrate flax and the products manufactured from it. Presented by the Barbour Bros. Co., of New York City.

638. Rope made from the preceding. Same source and donor.
639. Black withe branches. The branches of *Serjania polyphylla* (L.) Radlk. (*Sapindaceae*—Soapberry Family). Native of the West Indies. Acquired by N. L. Britton at St. Jan, West Indies, in 1912.
640–642. Baskets made from the preceding. Same source and donor.
643. Emajagua bark.—The bark of *Muntingia Calabura* L. (*Elaeocarpaceae*—Elaeocarpus Family). Native of tropical America. Acquired at Holguin, Cuba, by J. R. Towne.
644. Bast-fibers from the preceding. Used for tying bundles of tobacco and cigars. Same source and donor.

THE BASSWOOD FAMILY (*Tiliaceae*)

Jute Exhibit

The jute plant is the product of *Corchorus capsularis* L. and *C. olitorius* L., native of Asia and cultivated for their fiber in all tropical countries. Jute is the bast-fiber from the bark of the stems. The processes of preparing it from the stem are very similar to those described for the preparation of hemp.

645. The seed-pods of the jute plant.
646. Jute fiber from the Philippine Islands. Presented by Theodore Müller.
647. Crude jute fiber. Presented by the United States Department of Agriculture.
648.[11] Light-colored crude jute fiber.
649. Dark-colored crude jute fiber.
650. Carded light-colored jute.
651. Unfinished jute sewing twine.
652. Jute yarn in hank.
653. The same on spool.
654. Dark-colored cut jute twine.—Twine cut into convenient lengths for use.
655. Finished light-colored commercial twine.
656. Unfinished light-colored hop twine. Used for tying hop-plants to their poles.
657. Finished dark-colored commercial twine.
658. Light-colored jute packing.
659. Dark-colored blocking cord.
660. Sash cord.
661. Jute fiber. Deposited by Columbia University.
662.[12] Basswood mat.—Made of the bast-fibers of the bark of *Tilia parviflora* Boiss. Native of the Orient.
663. Rope made from the preceding.
664. Dyed rope from same.

[11] Numbers 648–660 comprise a series of specimens representing the crude and manufactured products of jute, presented by Travers Bros., of N. Y. City.

[12] Numbers 662–674 were presented by the Field Museum of Natural History.

665–668. Bags made from same.
669. Sandals made from same.
670. Crude bast-fibers of a species of *Tilia*.
671. Another specimen of same, from Russia.
672. Basket made from same.
673. Rope made from same.
674. Mat made from same.
675–676. Basswood sacks.—Made of the fibrous bark of a species of *Tilia*, in Russia. From the Paris Exposition of 1900.
677. The inner bark of a species of *Apeiba*. Native of tropical America. Used for making coarse rope. From San Carlos, Costa Rica, through the Philadelphia Museums.
678. The same from Guatemala. Same donor.
679. Rope made from the fiber of *Apeiba Tibourba* Aublet. Native of tropical America. Acquired by R. S. Williams in Panama, March 21, 1908.
680. Anilao.—Bast-fibers from the stem of *Columbia serratifolia* DC. From the Philippine Islands. Presented by Theodore Müller.

THE MALLOW FAMILY (*Malvaceae*)

681. Paritium rope.—From the bast-fibers of *Paritium elatum* G. Don. Native of the East Indies. Acquired at Buitenzorg, Java, in 1901, by Percy Wilson.
682. Mahoe rope.—Made of the bast-fibers of *Paritium tiliaceum* (L.) St. Hil. Native of tropical America. Acquired in Jamaica, by Mrs. N. L. Britton.
683. China jute stems.—The stems of the velvet leaf, *Abutilon Abutilon* (L.) Rusby. Native of southern Asia and widely naturalized in America. Collected at Easton, Pennsylvania, by A. A. Tyler.
684. China jute fiber. Fiber from the preceding stems. Presented by the United States Department of Agriculture.
685. Okra fiber.—Fiber from the stem of *Hibiscus esculentus* L. Native of tropical Africa and widely cultivated for its fruit. Deposited by Columbia University.
686. Ambari or Deccan hemp.—The bast-fiber of *Hibiscus cannabinus* L. Native of the East Indies. From Hyderabad, India, through the Philadelphia Museums.
687. Rozella hemp.—Bast-fibers from the stem of *Hibiscus Sabdariffa* L. Native of tropical regions of the Old World. From India, through the Philadelphia Museums.
688. Mukuge fiber.—The bark of *Hibiscus Syriacus* L. Native of the Orient and widely cultivated for decorative purposes. From Japan, through the Philadelphia Museums.
689. Malvaviscus fiber.—The bark-fiber of *Malvaviscus arboreus* Cav. Native of tropical America and cultivated for ornament. Deposited by Columbia University.
690. Tanay.—Bast-fibers from the stem of *Kleinhovia hospita* L. From the Philippine Islands. Presented by Theodore Müller.

THE BOMBAX FAMILY (*Bombacaceae*)

691. Ceibon.—Sections of the stem of *Bombax emarginata* A. Richard. Native of Cuba. Acquired at Banos de San Vicente, Cuba, in 1910, by N. L. Britton.
692. Crude fiber from the inner bark of the preceding. Used for packing tobacco in bales. Same source and donor.
693. A finer quality of the same, from Guam, Cuba. Same donor.
694. Bombax stem and fiber. From an undetermined species of *Bombax*.
695. Balsa-wood fiber. The bark-fiber of a species of *Ochroma*. Deposited by Columbia University.

THE COLA-NUT FAMILY (*Sterculiaceae*)

696. The bark-fiber of *Sterculia pallens* L. Acquired by John Torrey and deposited by Columbia University.
697. Abroma fiber.—The fiber of *Abroma angusta* L.f. Native of the East Indies.
698. Anabo. The same from the Philippine Islands. Presented by Theodore Müller.

699. Lace-bark tree.—Sections of the stem of *Lagetta Lintearia* Lam. (*Thymelaeaceae*—Mezereon Family). Native of Jamaica. The inner bark has been separated into layers of bast-fibers, and woven into an ornamental whip. Presented in 1902 by William Fawcett.
700. Bark of the preceding. From the same donor.
701. The layers of bast-fibers of the preceding, separated for use in the decoration of hats and for similar purposes. Same donor.
701.1[13]–701.2. Broad strips and coarse thread twisted from them.
701.3–701.4. Narrower strips and finer thread.
701.5–701.6. Still narrower strips and finer thread.
701.7. A dozen handkerchiefs made of this material.
701.8–701.9. Two shirts made of the same material.
702. The bark of a species of *Daphne*. (Same family). Native of Europe and Asia. Used in paper making. From Japan, through the Philadelphia Museums.
703. Canadian hemp.—The fibrous stem of *Apocynum cannabinum* L. (*Apocynaceae*—Dogbane Family). Native of North America. Used as a substitute for hemp. Collected and presented by Edwin Munsterburg.
714. Unicorn pods.—The pods of a species of *Martynia* (*Martyniaceae*—Unicorn-pod Family). Native of the southwestern United States. The fibers of this pod are used in weaving, for decorative effects. Acquired in Arizona, by D. T. MacDougal.
715. Ornamental basket.—Made by the Pima Indians of Arizona and decorated with the dark-colored fibers of the preceding. Same donor.

[13] 701.1–701.9 comprise a series representing the Japanese Papier-silk and articles made of it. This is a very thin and strong tissue paper made of the wood of *Edgeworthia Gardneri* Meissn. (Same family as of the preceding), native of eastern Asia. The paper is cut into strips of different widths for making thread or yarn of different degrees of fineness. These strips are twisted into threads, which are then woven into fabrics, the warp consisting of genuine silk. Presented by the Japan Paper Yarn Co., of Tokio, Japan.

716. Toad-flax. Butter-and-eggs.—The stems of *Linaria Linaria* (L.) Karst. (*Scrophulariaceae*—Figwort Family). Native of Europe. Used as a flax-substitute. Collected by H. H. Rusby at upper Montclair, New Jersey.
717. Dish-rag gourd or vegetable sponge.—The fruit of *Luffa Luffa* (L.) Lyons (*Cucurbitaceae*—Cucumber Family). Native of the Old-World tropics and widely naturalized in tropical regions. Presented by Lauderback & Sons, of New York City.
718. The same with the outer layers of the pericarp removed to show the inner fibrous framework. Same donor.
719. Friction brush.—Made from the above and used as a sponge substitute in the bath. Same donor.
720. The same, with a long handle. Same donor.
721. A fancy box made of the same. Presented by Miss Marie L. Sanial, of New York.
722. Fiber of the fruit of *Luffa Luffa* (L.) Lyons. From the Philippine Islands. Presented by Theodore Müller.

Cork and Its Products

Cork is the peculiar celluar tissue composing the outer layers of the bark of most trees, and serving as a protection for the inner bark, to which belong the tissues so serviceable as textile fibers. The cellulose walls of cork cells are more or less thickly lined with a layer of the peculiar substance *suberin*, chemically a close relative of fat, and to which the useful properties of cork are chiefly due. In a few trees, the layer of cork tissue is of sufficient thickness and continuity and its properties of lightness, toughness, elasticity, and impermeability are such as to render it of value for the making of bottle-stoppers and for many other purposes. Our present supply of cork comes practically from one species of cork oak (*Quercus Suber* L. of the *Fagaceae*, or Beech Family), native of the Mediterranean region and extensively cultivated. The layer of cork, if not artificially removed, would be naturally cast off by the tree after a certain number of years and new layers would be successively produced. For economic use the cork is removed in a single sheet or in large pieces and is known as *cork-wood*. In this condition it contains many fissures and has a very rough external appearance. Preparation consists in the removal of such of the outer portions as are

useless, and even detrimental to the product, and the closing up of the fissures so as to give a more or less uniformly coherent body. The latter result is attained by alternately heating and beating the sheet. After this process, the sheets differ widely in their degree of the qualities which give cork its value. In accordance with these differences, the cork is graded in quality and assorted into classes, each especially suitable for certain uses. It is then shipped to the factory, where it is further trimmed and perfected in preparation for use. The cutting of the cork is effected by means of extremely thin and sharp circular knives, rotating at high velocity.

723[14]. Virgin cork jacket.—The first coat of bark taken from a cork tree (*Quercus Suber* L.) carefully removed in a single sheet.
724. Section of wood and bark of the cork tree from the province of Grosseto, Italy, through the Paris Exposition of 1910.
725. The same from *Q. occidentalis* J. Gay. Native of southern Europe. Same locality and source.
726. Branch, with bark, of *Q. Suber* L. Produced in Spain.
727. Acorns from the same. Same source.
728. Crude sheet of bark from same.
729. A cork picture. Made of very thin sheets of cork and representing remarkable skill on the part of the cutter.
730. Fish cork.—Crude cork of low grade, boiled and certain of the outer portions scraped off. Used for the making of floats for fishermen's seines.
731. Seine floats made from the preceding.
732. Gill corks made from the same.
733. Native-made seine float. Picked up on the beach at Virgin Gorda, West Indies, by N. L. Britton and W. C. Fishlock.
734. Cork bobbins used as anglers' floats.
735. Cork handles for fishing rods.
736. Soda wood of common quality. Used for making the common grade of soda-water corks and for other rough purposes.
737. Strips cut from the preceding, before and after punching.
738. Taper corks of regular length, cut from the preceding.
739. The same, of short length.
740. Brewers' cork of ordinary quality. For cutting large corks for brewers' use.
741. Strips cut from the preceding.
742. Corks cut from the preceding, regular length.
743. The same, short length.
744. Soda wood of medium quality.

[14] Unless otherwise specified, the samples in our cork exhibit are comprised in a donation from the Armstrong Cork Company, of Pittsburgh, Pennsylvania.

745. Strips cut from the preceding.
746. Corks cut from the preceding.
747. Soda wood of fine quality.
748. Strips cut from the preceding.
749. Strips cut from wine wood. Used for cutting corks of fine quality for wine bottles.
750. X quality of wine corks.
751. XX quality of wine corks.
752. Vial wood, X quality. For making corks for small vials.
753. Strips cut from the preceding.
754. X and XX quality of corks.
755. Vial wood, XX quality.
756. Strips cut from the preceding.
757. Vial corks, cut from the preceding.
758. Mustard corks, XX quality. For use in mustard bottles.
759. Vial wood, XXX quality. For vial corks of the finest quality.
760. Strips cut from the preceding.
761. Corks cut from the preceding.
762. Wine wood, XX and XXXX quality.
763. Fine cork of extra thickness, for large corks.
764. Champagne corks cut from the preceding. The finest and most expensive of all corks.
765. Glued corks. Cut from sheets which have been glued together.
766. Jar corks. Large thin corks used for topping jars.
767. Cork washers.
768. The same made from the finest quality of cork.
769. The same of different styles.
770. Cork axle washers. Washers for attachments to axles, especially of automobiles, outlasting from six to ten leather washers.
771. Cork grips for bicycle handles.
772. Shoemaker's cork. Used for in-soles and other articles for shoemakers' use.
773. Cork lift.—Made by gluing together a number of sheets cut from the preceding and used to lengthen the foot of one possessing a short limb.
774. Split cork, quality A. For shoemakers' use.
775. Cork insoles made from the preceding.
776. Lined cork. The sheets as lined with cloth, ready for making the preceding.
777. Cork paper, one two-hundredth of an inch in thickness. For the mouthpieces of cigarettes and similar uses.
778. Cork-tipped cigarettes. Presented by H. H. Rusby.
779. Cork churn strips for providing tight covers for churns.
780. Cork shavings. Used as packing material.
781. Granulated cork, regular. For glueing to paper to make bottle wrappers and packing sheets.
782. The same, No. 5.
783. The same, No. 4.
784. The same, No. 3.
785. The same, No. 2.
786. The same, No. 1.

787. The same, No. 000.
788. The same, No. 00.
789. The same, No. 0.
790. The same, No. 20.
791. Cork flour. This, like those which precede, is used in the making of linoleum.
792. Bath matting. Matting used in bathrooms, made of a composition of ground cork.
793. Linoleum.—An oilcloth substitute, composed chiefly of ground cork. Presented by Arthur See, of Newark, New Jersey.
794. Suberin.—The substance lining the cells of cork tissue, which gives to the cork its peculiar useful properties. Suberin is chemically closely related to fat.
795. The wood of the cork-wood tree or balsa-wood tree.—The wood of a species of *Ochroma*. Native of tropical America, where it is universally used in making rafts or balsas. In spite of its extreme lightness, about equaling that of cork, this wood is quite tough and strong. It is frequently used as a substitute for cork, for bottle stoppers. It is now being employed in the manufacture of airplanes. Presented by the American Wood Encysting Company, of New York City.
796. Mexican wooden corks. Cactus corks.—Said to be made of the wood of a cactus, native of Mexico. Presented by H. H. Rusby in 1903.
797. Native float for seines. Probably made of the wood of *Annona palustris* L. From Tortola, Virgin Islands. Presented by W. C. Fishlock, 1919.

Paper Pulp

Paper pulp is manufactured from various fibrous materials, chiefly of vegetable origin. Formerly, it was made almost exclusively of cotton or linen rags and from straw, the object being to combine in an artificial texture plant-fibers consisting as nearly as possible of pure cellulose. In wood fiber these cellulose walls are largely overlaid with various plant substances which greatly interfere with the usefulness of the fiber in paper making. When processes were discovered for so treating the wood fiber as to remove these substances from the cellulose wall, the use of wood in paper making became established and is now the principal basis of its manufacture.

798.[15] A log of spruce wood.—From *Picea mariana* (Mill.) B.S.P. (*Pinaceae*—Pine Family). Native of northeastern North America. This is the form in which the wood is received at the paper-pulp mills of Caddyville, New York.

[15] The articles in this exhibit, unless otherwise specified, were presented by the International Paper Co., of New York City.

799. Similar log of poplar or aspen.—The wood of *Populus tremuloides* Michx. (*Salicaceae*—Willow Family). Native of North America.
800. The preceding, with the bark removed and ready for cutting into chips preparatory to making the pulp.
801. Mixed chips of spruce and poplar, prepared from the preceding.
802. Newspaper stock, direct from the beater.—Composed of ground wood, sulphite, white chloride of lime, and water. From the sulphite mill.
803. Unbleached soda pulp.—A pulp prepared from poplar chips by treatment with caustic soda and boiling in steam at a pressure of eighty pounds.
804. The preceding, after being bleached with a solution of chloride of lime.
805. Mechanical wood fiber.—Made from ground spruce chips, screened and prepared for transportation.
806. Chemical wood fiber or sulphite.—Made from spruce chips by a chemical process, washed, screened, and prepared for transportation.
807. Sulphite screenings paper. Paper made from the preceding.
808. Newspaper stock. Wet Bioke.—The preceding pulp, formed into a web on a paper machine and removed before drying and calendaring.
809. Newspaper print paper, made from the preceding.
810. Novel paper.—Used for printing cheap editions of novels and other like literature.
811. Coating.—A kind of paper made from specially prepared wood pulp, half spruce and half poplar.
812. Magazine book paper.—Made from the same material.
813. A wide roll of sulphite screening paper.
814. A very heavy paper for various uses.
815. Another thickness of the same.
816. Carded middles.—Made of a mixture of paper and wood pulp. Used in making cardboard.
817. The same, cut into sheets.
818. Coated Manila board. For the same uses as the preceding.
819. The same cut into sheets.
820. A large roll of heavy wrapping paper.
821. A smaller roll of the same.
822. Hanging paper.—Made of the same materials as newspaper stock but mixed in different proportions. Used in the making of wall-paper.
823. Mill wrappers. A strong, thick paper used for wrapping rolls of paper for shipment from the mills.
824. Another sample of the same.
825. Cotton waste as received at the paper mill from the cotton mill, to be used in making cotton pulp for paper.
826. The same after treatment at the paper mill, being dusted, assorted, cooked under steam pressure, washed, beaten and bleached.
827–840. Straw paper and its products. These samples were presented by the Dauch Paper Company, of New York City.
827. Wheat straw. Used for the making of straw paper.
828. The same after being boiled in lime water.
829. Crude pulp from wheat straw.—The straw has been reduced to a pulp by sufficient boiling in lime water and the excess of lime then removed by washing in water.

830. The same collected on a wire matting to allow the water to drain off.
831. The same formed into a web of uniform thickness and afterward passed between cold-pressing rollers to remove more water.
832. Wheat straw paper. The preceding after being carried around heated cylinders to dry it and make a finished paper.
833. The preceding after having been smoothed by passing through cold rollers under heavy pressure.
834. Corrugated straw board without backing.
835. Bottle wrappers of various forms and sizes, made from the preceding. Used for wrapping bottles, crockery and other breakable articles.
836. Corrugated straw board with a backing of plain paper to impart strength.
837. Bottle wrappers made from the preceding.
838. A book-cover made from the same.
839. Corrugated straw board, backed and faced with plain paper, to increase its strength.
840. Wrappers made from the preceding.
841. Chinese rice-paper pith.—The pith of the stem of *Fatsia papyrifera* Benth. (*Araliaceae*—Ivy Family). Native of Southern Asia. This pith is placed in a lathe and is turned off into extremely thin sheets, which are used by the Chinese for making their rice paper.
842. Papyrus.—Thin sections of the pith of the stem of *Cyperus Papyrus* L. (*Cyperaceae*—Sedge Family). Native of the Orient. Acquired at Syracuse, Sicily, by Miss Harriet L. Britton. Used like the preceding.
843. Moss paper.—Made by the Chinese by pressing together various species of moss. Presented by H. H. Rusby.

Rubber and Its Allies

This product consists of the coagulated milk juices of a large number of plants. This juice is a mixture of various plant principles, some of them nutritive, others waste matter. Its composition varies widely with the different plants. Its essential constituent, and the one that chiefly gives it value, is caoutchouc. With this occur resins and a variable amount of albuminous matter, with a variety of dissolved substances, all held in water in the form of a milky emulsion.

The milk is obtained by cutting or puncturing the bark and placing a suitable receptacle to catch the flow. It is then coagulated by various methods, in different countries. The commonest method is by dipping a wooden paddle in the milk, which attaches itself to the paddle in a thin layer, and then holding it in a current of smoke. This process is repeated until a convenient mass, known as a *bolacho*,

bottle or biscuit, has formed upon the paddle, which is then removed and allowed to dry and season. By this method, not only is the rubber coagulated, but the creosote of the smoke acts as an antiseptic and prevents putrefaction of the albumin in the rubber. The mass thus formed contains much water, which gradually dries out as the rubber is kept. As the process continues the color gradually changes from milky-white to yellow, brown, and black, the central portion long retaining its white color. By modern improvements on the above method, the milk is coagulated by the addition of various substances and the water then squeezed out of it by pressure. Occasionally, the resins and other foreign matter are removed from the milk by chemical processes, leaving the rubber. Still other processes are described below.

Rubber trees are now largely grown in plantations, especially in Java.

THE SPURGE FAMILY (*Euphorbiaceae*)

Nos. 844–906 illustrate Para rubber and articles made from it. This is the best quality of rubber known and is obtained from various species of the genus *Hevea*. These are large trees, native of the entire Amazon valley and extending somewhat into adjacent regions.

844. Branch bearing leaves and fruits of *Hevea brasiliensis* Muell. Arg. Grown in Java and presented by William Fussani, 1919.

845–847. Hevea seeds.—The seeds of a species of *Hevea* packed in charcoal, by a special process, the only way in which their vitality can be preserved for any considerable length of time. Presented by the India Rubber World.

848.[16] Rubber pick.—A pick used for puncturing the bark to cause the flow of the rubber milk.

849. The same with a long handle.

850. Another specimen of the same, presented by John Lane Beck, of New York City.

851. The rubber milk as it comes from the tree.

852. "White" rubber milk.—This milk, after remaining several years in a bottle, has naturally coagulated and formed itself into rubber. Acquired on the Upper Rio Negro by Weiss & Schmidt.

853. "Red" variety of same. Same source and donors.

854. Tichella.—Cups used for catching the milk as it flows from the tree.

855. The same, presented by John Lane Beck.

[16] Unless otherwise specified, were presented by Nos. 848–871 Carlos Manuel Asensi, of the Rio Madeira, Brazil.

856. Cup rubber.—Rubber that has been allowed to coagulate and form spontaneously in the cups.
857. Scrap rubber. The rubber which has formed upon the tree trunks and been scraped off into irregular masses.
858. The same wound into a ball.
859. Sap can.—The can used in carrying the milk from the forest to the smoking station.
860. Another of the same, presented by John Lane Beck.
861. Smoking furnace.—This furnace possesses only a very small opening at the base for the admission of air, so that the fuel, instead of blazing, emits a dense smoke at the top of the furnace. The rubber milk is exposed to the action of this smoke.
862. Smoking nuts.—The nuts of the Mutucu Palm, a species of *Attalea*, which contain a large amount of fat and yield much smoke.
863. Nuts of another species of *Attalea*.
864. Still another species, presented by John Lane Beck.
865. Dipping can.—The can holding the milk into which the paddle is dipped.
866. Smoking paddle.—This is a wooden paddle which is dipped into the milk and then held in the smoke, and upon which the mass of rubber is thus gradually formed.
867. Dipping ladle.—This a gourd ladle. After the mass of rubber on the paddle has become too large and heavy to be conveniently dipped, the milk is dipped up in this ladle and poured over the rubber mass, which is suspended in the smoke.
868. Bolacho, or "biscuit," of fine Para rubber, removed from the paddle by cutting a slit in the upper end.
869. Another form of the same.
870. Virgin rubber.—Rubber made from trees which have been tapped for the first time. The bolacho has been cut into pieces to ascertain that no adulterants have been introduced to it.
871. Cake rubber.—Rubber which has been pressed into a flat cake.
872. A coarse variety of Para rubber. Presented by the India Rubber World.
873. A fine variety of the same. Same donor.
874. Another specimen of the same.—Made from *Hevea lutea* Muell. Arg. Acquired at Achiquiri, on the Upper Mapiri River, by R. S. Williams, of the Garden Staff. This is about the most western range of the Hevea.
875. Fine Para rubber made in Bolivia. Presented by the India Rubber World.
876. Native-made rubber shoe. Made by the Indians of southeastern Peru. Presented by John Lane Beck.
877. Another specimen of the same.—These shoes are made by dipping a clay last into the rubber milk and smoking. Such shoes, made by the natives, were the first ones introduced to use by civilized man. Presented by the India Rubber World.
878. Native-made rubber coat.—This coat is made by spreading a thin coating of rubber milk upon calico. Source unknown.

Artificially Coagulated and Pressed Rubber

879.[17] Pressed cake rubber. Leaf or sheet rubber. Presented by Carlos Manuel Asensi.
880. The same from Matto Grosso, Brazil.
881. Sheet rubber. Made on the Culleden estate at Kalutera, Ceylon.
882. The same from the Arapolakande estate at the same place.
883. The same from the Selangor rubber estate at Selangor, Federated Malay States.
884. Another specimen of the same, washed and sheeted.
885. Worm rubber.—Rubber made to take a peculiar form, in the East Indies.
886. Sheet rubber from Singapore.
887. The same, made in the Botanical Gardens at Penang, East Indies.
888. Crepe rubber.—Rubber made in a peculiar form, in the East Indies.
889–893. Illustrating rubber plasters and their manufacture, for medicinal use. Presented by Seabury & Johnson, of New York.
890. A biscuit of the finest Para rubber.
891. The same ground and purified, ready for making into sheets.
892. The same rolled into sheets.
893–900. Samples of rubber base plasters, showing back and front sides.
893. A porous plaster.
894. A heart-shaped cough plaster.
895. Improved kidney plaster.
896. Breast plasters.
897. Plaster of extra size.
898–899. Adhesive plaster, in rolls.
900. Double adhesive plaster.
901–904. The manufacture of rubber marking stamps. Presented by Abram Aarons, of New York City.
901. Sheet of unvulcanized fine Para rubber.
902. The same vulcanized.
903. Sponge rubber. The preceding, made porous by a special process.
904. Rubber stamps made from the preceding.
905–906. Stages in the manufacture of hard rubber fountain pens. Presented by the L. E. Waterman Co., of New York City.
907–913. The genus *Micrandra*, comprising plants of Venezuela, which yield a poor quality of rubber. The specimens are from Alto Coura, Venezuela, and were presented by F. B. Richard.
907. Picture of a tree trunk of *Micrandra* sp., from which the milky juice is collected.
908. Flowering branch of same.
909. Fruiting branch of same.
910. Leaves of the same preserved in formaldehyde solution.
911. Fruit of same.
912. Bark of same, preserved in formaldehyde solution.
913. Specimen of rubber made from the same.

[17] Numbers 879–888, unless otherwise stated, were presented by the India Rubber World.

THE MULBERRY FAMILY (*Moraceae*)

914. Cordoban.—The stems of *Pedilanthus Pringlei* Robinson. Native of Mexico. It yields a small quantity of rubber. Collected by H. H. Rusby at Cuicatlan, Oaxaca, Mexico, July, 1910.

915. Palo Amarillo.—The fruiting branches of *Euphorbiodendron fulvum* (Rose & Alt.) Millsp. Native of Mexico. The tree yields a small quantity of rubber. Collected by H. H. Rusby at Empalma de Gonzales, Mexico, June, 1910.

916–923. The Central American rubber tree, *Castilla elastica* Cerv. Native of Central America and largely cultivated as a source of rubber. The milk of this tree is collected and treated very much in the same way as that of the *Hevea*. These samples were presented by the India Rubber World.

916. Rubber coagulated by water only.

917. Rubber coagulated by the juice of the "Amole" (probably a species of *Yucca*, of the lily family).

918. Central American rubber.—Made, in 1903, in the Botanical Garden of Dominica, West Indies, from cultivated trees eight years old.

919.[18] Central American Rubber, produced in the Royal Botanic Garden, Trinidad, West Indies.

920. The same, from the Mezarni River, British Guiana.

921. Mesquit rubber. The same from Mexico. Presented by R. L. Johnston.

922. Hule or Ule Tuna rubber.—Made from *Castilla Tuna* Hemsley. Native of Central America. From Nicaragua.

923. Concho rubber.—Made from a species of *Castilla*, native of South America. From the Amazon valley.

924. Assam rubber.—Made from *Ficus elastica* Roxb., the original source of India rubber. From trees cultivated at Selangor, Ceylon.

925. A Rubber of unknown botanical origin. From Bolivia. Presented by A. Metzner, of New York City.

THE DOGBANE FAMILY (*Apocynaceae*)

926.[19] Leafy branch of *Landolphia Thollonii* Dewevre.

927. Branches of the same.

928. Rubber made from the preceding plant.

929. Picture of leafy branch of *Landolphia humilis* Schlecht.

930. Stems of the same.

931. Stem of *L. owariensis* Beauv.

932. Leaves of the same.

933. Soudan twist rubber.—Made from a species of *Landolphia* from French Soudan, Africa.

934. Red Kasai rubber.—Made from an African species of *Landolphia*. From the Kasai River, Congo.

935. Black Kasai rubber.—From another species of *Landolphia*, of the same region.

[18] Numbers 919 and 920 were presented by the India Rubber World.

[19] Numbers 926–935, representing the genus *Landolphia*, of tropical Africa, were presented by J. H. Heinicke, of New York City.

936. Red Upper Congo rubber.—Made from an undetermined species, on the Upper Congo, Africa.
937. French Congo ball rubber.—Another variety from the same region.
938. Prime Lopori rubber.—From an undetermined plant of the River Lopori, Congo Free State, Africa.
939. Kamerun rubber.—Made from an undetermined species, at the German Colony of Kamerun, West Africa.
940. Alima ball rubber.—From the Alima River, French Congo.
941. Milk white rubber.—Rubber made from *Forsteronia floribunda* G. F.W. Meyer.
942. Pink Madagascar rubber.—Made from a species of *Landolphia*. Native of Madagascar.
943. Penang Rubber.—Made from *Willughbeia firma* Blume. Native of the Malay Peninsula. From Penang, East Indies.
944. Leafy branch of *Carpodinia lanceolata* K. Schum.
945. Stems of the same plant.
946. Lower Congo red thimbles.—From a species of *Carpodinia*. Native of Africa. From the Congo Free State.
947. Root rubber.—Made from a species of *Carpodinia*, native of eastern Rhodesia.
948. Native Java rubber of unknown botanical origin. Presented by F. E. Lloyd.
949. A rubber-yielding vine, imported from Mexico for the extraction of its rubber. Presented by H. H. Rusby.

950–961.[20] The guayule rubber plant and its products. This is *Parthenium argenteum* A. Gray (*Carduaceae*—Thistle Family), a shrub native of the southwestern United States and Mexico. To obtain this rubber, the shrub is torn up by the roots and ground fine. It is then thoroughly boiled and stirred, by which the rubber is freed from its cellular tissues, and afterwards skimmed off and pressed into cakes.
950. The dried guayule rubber plant. Presented by F. Austin.
951. Leafy branch of same. Presented by F. J. H. Merrill.
952. Dried plants of same.
953. The ground plant. Ground by passing through a 2-roll crusher. From Marathon, Texas.
954. The same, after passing through the pebble mill.
955. The rubber and floating bagasse. Taken from the surface of the skimming tank.
956. Sinking bagasse. Taken from the bottom of the skimming tank.
957. Rubber and bagasse after one hour's boiling and one or two days in the settling tank, to prepare it for the compressor.
958. Rubber skim. The preceding after high pressure in the compressor for 40 minutes.
959. Water-logged bagasse, after 40 minutes in the compressor.
960. The rubber, washed and sheeted and ready for the market.
961. Samples of commercial guayule rubber. Presented by the India Rubber World.
962. Colorado rubber.—Made from *Picradenia floribunda* Cockerell (*Carduaceae*—Thistle Family). Native of Colorado. From Buena Vista, Colorado. Presented by T. D. A. Cockerell, in 1904.

[20] Unless otherwise specified, these samples were presented by Francis E. Lloyd.

Gutta Percha

Gutta percha is the concrete milky juice of *Palaquium Gutta* (Hook. f.) Burck. (*Sapotaceae*—Sapota Family), and probably of other species of *Palaquium*, large forest trees of the East Indies. The original method of obtaining the gutta percha was by felling the trees, peeling off the bark and scraping the milk from the exposed wood surfaces. The milk was then left to harden spontaneously in the receptacle in which it was placed. Methods have since been devised for extracting it from the leaves and twigs, but the most of the product is still obtained in the old way.

Gutta percha is much harder and less prehensile and elastic than rubber, and is used for other purposes. It resists perfectly the action of sea water and is therefore used as a coating on all submarine cables, for which purpose most of it is consumed.

963. Gutta percha rod. Presented by the India Rubber World.
964. Commercial gutta percha in block form. Made in Borneo, and reboiled and purified in Singapore.
965. The same in chip form. Presented by the New York College of Pharmacy.
966. Same in the form of an ox. Made in Borneo. Presented by the India Rubber World.
967. The same in the form of a cone. Made in northern Borneo. Same donor.
968. The same in the form of sheets. Same donor.
969. Manila gum. Said to be made from the gutta percha tree.
970. Gutta percha extracted from the green leaves of the tree by a patented process. Presented by the India Rubber World.
971. Gutta percha pitch.—A waste product resulting from the manufacture of gutta percha. From the New York market. Presented by H. H. Rusby.
972–977. Balata, or balata gum. This is the coagulated milk-juice of two or more species of *Mimusops* (*Sapotaceae*—Sapota Family), native of northeastern South America. These are large forest trees. The milk is collected by felling the trees and girdling them at intervals of about 18 inches with deep grooves cut through the bark and into the wood. Cups are placed underneath each groove to catch the flow and that which adheres to the trunk is scraped off. Balata is more like gutta percha than rubber. It is said that the milk can be taken into the stomach without injury, while in the case of rubber milk, this would result fatally.
972. Balata made from the thick-barked balata-tree (*Mimusops Schomburghkii* Pierce). Collected from the tree near Santa Catalina, Lower Orinoca, Venezuela, in May, 1896, by H. H. Rusby. (See herbarium.)
973. The same, from the thin-barked balata-tree (*M. globosa* Gaertn.) Same source and donor. (See herbarium).

974. Specimen of balata from Dutch Guiana. Presented by the India Rubber World.

975–976. Other specimens of the same. Presented by A. E. Haughey, of New York.

977. A balata-like product from near Para, Brazil. Its botanical origin is not known, but it is probably genuine balata. Presented by the India Rubber World.

978. Gutta Jelutong, or Pontianac.—The coagulated milky juice of a tree of Borneo, probably *Dyera costulata* Hassk. (*Apocynaceae*—Dogbane Family). Presented by the India Rubber World.

979. A gutta-percha-like product of unknown botanical origin. From the East Indies. Presented by H. H. Rusby.

980. Almeidina gum or root rubber. Of unknown botanical origin. From Angola, western Africa. Presented by the India Rubber World.

981. Rubber bark.—The bark of a tree of the Philippine Islands, the botanical identity of which has not yet been definitely ascertained. Presented by Gravenhorst & Co., of New York City.

Varnish Resins[21]

Resins are waste products resulting in the growth of many plants, and existing in the plant dissolved in volatile oil, the mixture known as oleo-resin. In this form they are stored in various cavities in the wood and bark, whence they can be obtained by cutting or puncturing the latter. They very commonly exude spontaneously through accidental punctures and fissures. Through the natural or artificial evaporation of the oil, the resin results. Advantage is taken of this property to dissolve these resins in various volatile solvents and paint the solution upon objects to be varnished. The solvent then evaporates, leaving a coating of the resin. Varnish resins are more valuable in proportion as they are harder and less soluble. The best of them are dug from the ground, where they have long remained and become fossilized. The adulteration of varnish consists chiefly in the addition of common rosin and other inferior materials. Such varnish is not durable.

Kowree or Kowree Copal

This variety of copal, or varnish resin,—one of the best,—is found in a fossil condition in various portions of the

[21] Unless otherwise specified, the varnish resins in this collection were presented by A. P. Bjerregaard, of New York City.

Old-World tropics. It is supposed to have been produced wholly or chiefly from *Agathis australis* (Lamb.) Steud. (*Pinaceae*—Pine Family), native of Australia and the neighboring islands.

982. Piney kowree. An inferior variety, somewhat resembling pine-resin.
983. Singapore kowree or copal. A variety exported from Singapore.
984. Tandang kowree. Exported from Manila.
985. Manila kowree. Same source.
986. Basket Manila kowree. A variety of the preceding, imported in baskets.
987. White basket Manila kowree. A white variety of the same.
988. Manila nubs. A peculiar form of the same.
989. Agate kowree. A peculiar form from New Zealand.
990. Another sample of the same.
991–994. Other samples of New Zealand kowree.
995. Amber-colored New Zealand kowree.
996. Low grade New Zealand kowree.
997–1000. Samples of New Caledonia kowree.
1001. Hard New Caledonia kowree.
1002. New Caledonia kowree, containing embedded insects.
1003. Coated New Caledonia kowree.
1004. Soft New Caledonia kowree.
1005–1007. Spongy New Caledonia kowree.
1008. Fine white African kowree. The product of *Guibortia copallifera* Bennett. (*Caesalpiniaceae*—Senna Family). From the northern gold coast of Africa.
1009. White Benguela kowree or copal. From the same species as the preceding.
1010. The same, yellow.
1011–1017. Australian Pontianac kowree. Kowree from Australia, probably identical with the Borneo product.
1018–1019. White Pontianac kowree, from Borneo.
1020. The same, opaque-white.
1021–1022. Soft white specimen of the same.
1023. Soft dark specimen of the same.
1024–1025. Brown specimen of the same.
1026. Laminated specimen of the same, exhibiting a peculiar layered appearance.
1027–1032. Borneo kowree. Probably produced by one or more species of *Agathis*.
1033–1043. Various specimens of commercial kowree.
1044. Batoe gum. A kowree of unknown botanical origin.
1045. Kowree bush chips. Kowree in small fragments.
1046–1048. Samples of gray kowree.
1049–1057. Samples of brown kowree.
1058–1078. Samples of Congo kowree.
1079–1081. Soft Congo kowree.
1082. Agate-banded Congo kowree.
1083. A sample of Congo kowree with another fragment of the same embedded in it.
1084–1092. Samples of black dammar. Probably produced by one or more species of *Shorea* (*Dipterocarpaceae*—Dipterocarpus Family). Native of the East Indies. Samples from various parts of the East Indies.

1093–1096. Red resin of dammar. Samples separated from commercial black dammar. Of unknown botanical origin.
1097–1109. Various forms of resin found mixed with commercial black dammar.
1110–1111. Batavian dammar.
1112. Pontianac white dammar.
1113. Singapore white dammar.

Animi or Anime Copal

The animis are the very best varieties of varnish resin known. They are found fossil, mostly in Africa, and are probably the product of one or more species of *Trachylobium* (*Caesalpiniaceae*—Senna Family).

1114. A commercial sample from Africa.
1115. The same, containing embedded insects.
1116–1117. Zanzibar animi. The product of *Trachylobium Hornemannianum* Hayne. Samples from Zanzibar, Africa.
1118. The same from Sierra Leone.
1119. The same from Madagascar.
1120. The same from Mozambique.
1121. The same from Angola.
1122–1123. Accra copal.
1124. An African copal of unknown botanical origin.
1125. Pebble copal. A peculiar form of the same.
1126. Loanga copal. The same from Loanga, Africa.
1127–1147. Brazilian copal. This is a superior variety of varnish resin found fossil in Brazil and other parts of South America. It is probably the product of one or more species of *Hymenaea* (*Caesalpiniaceae*—Senna Family), or of a closely related genus.
1148. Demarara copal. A similar product, from Guiana.
1149. Colombian copal. The same from Colombia.
1150–1152. Sandaraca, or Sandarac. A resin produced by *Callitris articulata* (Vahl) Farwell (*Pinaceae*—Pine Family).
1153. French rosin.—The resin from one or more French species of *Pinus* (*Pinaceae*—Pine Family).
1154–1155. Pontianac gutta. A resin from Pontianac, Borneo, derived from *Dyera costulata* Hook. (*Apocynaceae*—Dogbane Family). Native of the East Indies.
1156–1158. Specimens of varnish resins of unknown botanical origin.
1159. Yellow Acaroides resin or "gum." The resin produced by *Xanthorrhoea hastilis* R. Br. (*Dracaenaceae*—Dracaena Family). Native of Australia.
1160. Another specimen of the same.
1161–1162. Red Acaroides resin or "gum." The resin produced by *Xanthorrhoea arborea* R. Br. Same family and home as the preceding.

Lac

Lac is an exudation produced on the stems of a variety of Chinese trees, chiefly in the *Euphorbiaceae*, or Spurge Family, as a result of punctures of the bark made by insects known as "lac insects."

1163. Scab lac. The lac in its natural condition, as scraped off of the trees.
1164. Button lac.
1165. Raw shellac.
1166. Stick lac.

Miscellaneous Resins

Asphalt (*Asphaltum*)

Asphaltum is a substance resembling pitch or tar in appearance and composition, found in large deposits called "asphalt lakes," in many countries. The manner of its origin is not positively known, but its original source is apparently vegetable. It belongs naturally near the resins, and is also related to coal.

1167. Asphalt from Ohio.
1168. The same, from California.
1169. Gilsonite. A form of asphalt from Utah.
1170–1171. The same from California and southward.
1172. Wurzite. A form of asphalt from Utah.
1173. Ozokerite. Another variety.
1174. Elaterite. Another variety, probably from Utah.
1175. Maltha, Grade C. A variety from Petrola, southern California.
1176–1178. Asphalt from Barbadoes.
1179–1180. Asphalt from Trinidad, West Indies.
1181. Asphalt from Cuba.
1182. Another sample from the West Indies.
1183–1185. Samples of asphalt from Colombia, South America.
1186–1187. Asphalt from Venezuela.

Turpentines, Tars, and Pitches

Turpentines are oleo-resins obtained as exudations through natural or artificial openings in the barks of various trees, especially those of the *Pinaceae*, or pine family. By properly distilling the turpentine we can obtain from it the volatile oil in its natural state, the resins or resin remaining behind. By the destructive distillation of this resin we can obtain a series of resin-oils.

Numbers 1188–1214 represent the turpentine industry of the southeastern United States. This turpentine is obtained from several species of "long-leaved pines," the principal one of which is *Pinus palustris* Mill. During the winter, cavities are cut into the side of the trunk, known as turpentine boxes. In the spring, the bark and outer wood of the trunk just above the box is hacked in such a way that the exuding turpentine will flow down into the box, whence it is removed for use. From this turpentine, when of good quality, an amount of oil equal to about 30 percent of its weight, known as oil of turpentine, can be obtained.

1188. Picture of a forest of long-leaved, or turpentine, pines after removal of the useless trees.
1189. Picture of a turpentine forest that has been scorched by fire.
1190. Picture of a tree of *Pinus palustris* Mill.
1191. Picture of a leafy branch of same, and of leaf details.
1192. Picture of sterile and fertile flowers and young cones of same.
1193. Picture of mature cone and seeds of same.
1194. Picture of seedlings and young plants of same.
1195. Map of the district in which *P. palustris* grows.
1195.1. Leafy branch of tree.
1196. Cones of same.
1197. Virgin dip turpentine.—The product of the first tapping of a tree.
1198. Second-year dip turpentine.
1199. Scrape turpentine.—The turpentine scraped off from the tree where it has adhered. It is of inferior quality.
1200. Oil of t rpentine.—The essential oil distilled from the turpentine.
1201–1210. Common rosin, or frankincense. The resin remaining after the oil is distilled.
1201. Rosin, good No. 1.
1202. " good No. 2.
1203. " No. 1.
1204. " No. 2.
1205. " low pale.
1206. " pale.
1207. " extra pale.
1208. " good strained.
1209. " strained.
1210. Ordinary commercial rosin.
1211. Pinolin.—The first run of empyreumatic volatile oil, or rosin oil, obtained by the destructive distillation of rosin.
1212. Pine tar.—The empyreumatic oleo-resin obtained by the destructive distillation of the wood of the turpentine pine. For this purpose, the dead

trunks and branches, stumps, and roots are commonly used. They are closely stacked in a circular pile on a cement or other hard base, around the edges of which a trench is dug, which trench empties into a suitable pit. The stack is then surrounded by earth and sods, to exclude air, except at the top, where the stack is then ignited. As the uppermost wood burns, the heat liquifies the turpentine in the wood just below, that turpentine dripping out and down through the stack and into the trench, whence it flows into the pit. The wood thus exhausted then burns and distils the next lower layer, the process continuing until all the wood is burned. This tar would naturally be of light color, but the smoke and other products of burning turn it black. When cold, it becomes hard. By subjecting it to distillation, a volatile oil is obtained, known as oil of tar. The residue is common or naval pitch, largely used in caulking the seams of ships.

1213. Oil of tar. A volatile oil distilled from tar.

1214. Naval pitch.

1215. A turpentine box cut in the trunk of *Pinus palustris* Miller.

1216. Leafy branches of pine-tar tree.

1217. Picture of the same.

1218. Picture of tools used in cutting turpentine boxes.

1219. Picture of turpentine orcharding, or of men engaged in collecting turpentine.

1220. Gandor-Biroza resin.—The product of *Pinus longifolia* Roxb. Native of the Himalaya region, British India.

1221. Pine balls.—A turpentine exuding from *Pinus caribaea* Morelet. Native of the southeastern United States, and West Indies. Collected at Miami, Florida, by Small and Wilson.

1222. Canada turpentine. Balsam of fir.—The oleo-resin of *Abies balsamea* (L.) Miller. Native of eastern North America. Presented by Seabury & Johnson, of New York.

1223. Pix Burgundica. Burgundy pitch.—The prepared turpentine of *Picea Abies* (L.) Karst. Native of southern Europe, and cultivated. In this case the exuded turpentine is melted in hot water and strained. In the process it takes up a considerable amount of water and becomes hard on cooling. Presented by Seabury & Johnson, of New York.

1224. Pix Canadensis. Canada pitch.—The prepared oleo-resin of *Tsuga canadensis* (L.) Carr. Native of northern North America.

1225. Sandarac, or Sandaraca. (See No. 1150.) Same donor.

1226. Dammar.—The product of *Agathis loranthifolius* Salisb. and of other species of *Agathis*. Native of the East Indies and New Zealand. Same donor.

1227. Amber. Succinum.—A fossil resin, produced by *Pinites succinifer* Goeppert. It is mostly obtained on the shores of the Baltic, where it is washed up out of the earth by the waves and thrown upon the beach. Presented by P. B. Bjerregaard, of New York City.

1228. Brown kowree. (See No. 982 et seq.)

1229. White kowree. (See No. 982 et seq.) Supposed to be the product of *Agathis australis* (Lamb) Steud. Native of Australia and neighboring islands. Presented by S. Patterson, of New York City.

1230. Yellow kowree. Same donor.

1231. Another specimen of the same. Same donor.

1232. Black kowree. Same donor.

1233. Bread-fruit resin.—The resin of *Artocarpus integrifolia* L. (*Moraceae*—Mulberry Family). Native of the East Indies and cultivated. From the Field Museum of Natural History.

1234. Resina de Jataba.—Probably the product of *Hymenaea Courbaril* L. (*Caesalpiniaceae*—Senna Family). Native of tropical America. From Ceara, Brazil, through the Field Museum of Natural History.

1235. Locust resin. Same source as the preceding. From Surinam, Guiana.

1236. South American copal.—Produced by a species of *Hymenaea*, probably the same as the preceding. Used in Brazil by the natives for making ornaments similar to those made from amber. Acquired in eastern Bolivia by H. H. Rusby.

1237. Brazilian copal. Identical with the last and used for varnish making. Presented by Patterson & Co.

1238. Zanzibar copal. (See No. 1116.) Same donor.

1239. Guaiac resin.—Produced by *Guaiacum officinale* L. (*Zygophyllaceae*—Guaiac family). Native of West Indies and northern South America. An impure specimen from Haïti. Presented by Hugo Brussel & Co., of New York City.

1240. Olibanum, or frankincense.—A gum-resin produced by *Boswellia Carterii* Birdwood. Native of Arabia and East Africa. (*Burseraceae*—Myrrh Family). Presented by Seabury & Johnson, of New York.

1241. Elemi.—A gum-resin produced by *Canarium villosum* (Blume) F. Vill. Samefamily. Native of the Philippine Islands. Same donor.

1242. Tabanuco.—Produced by *Dachryodes excelsa* Vahl. Same family. From Porto Rico. Used for torches and kindling. Presented by Mrs. N. L. Britton.

1243. Toona gum.—A gum exuded by *Cedrela Toona* Roxb. (*Meliaceae*—Mahogany Family). Native of New South Wales. From the New York market. Presented by H. H. Rusby.

1244. Malayan Chen or pitch.—A resin from the Malay Peninsula, of unknown botanical origin. From the Field Museum of Natural History.

1245. Stick lac. (See number 1163 et seq.) From Siam. From the Field Museum of Natural History.

1246. Another specimen of the same. Presented by Zinsser & Company, of New York City.

1247. Button lac. Same donor.

1248. Seed lac. Same donor.

1249. Orange shellac. Same donor.

1250. Another sample of the same. Presented by Adam Thorner, of New York.

1251. Bleached lac. The same product after being decolorized. Same donor.

1252. Mastic. Mastiche.—An oleo-resin produced by *Pistacia Lentiscus* L. (*Anacardiaceae*—Sumac Family). Native of the Mediterranean region and cultivated. Same donor.

1253. Japanese lacquer tree.—A portion of the stem of *Rhus vernicifera* DC. Same family. Native of eastern Asia. Presented by T. Rein.

1254. Japanese lacquer. Secured from the preceding.

1255. Wood dressed with the preceding.

256. Karomoni resin.—A gum resin produced by *Symphonia globulifera* L.f. (*Clusiaceae*—Gamboge Family). Native of northern South America and cultivated. From Jamaica. Presented by W. Harris.
1257. White dammar. The product probably of *Shorea Talura* Roxb. (See number 1084.) From Java. Presented by Patterson & Co., of New York.
1258. Brown Manila copal.—A fossil resin produced by *Vateria indica* L. Same family. Native of the East Indies. From Borneo. Same donor.
1259. Zapote gum. Probably produced by a species of *Lucuma* (*Sapotaceae*—Sapota Family). Native of Peru. From the New York drug market. Donated by H. H. Rusby.
1260. Malay torch.—An unknown resin wrapped in palm leaves and used as a torch by the natives of the East Indies. From the Field Museum of Natural History.
1261. Another variety of the same. Same donor.
1262. Brea de Tierra.—A fossil resin of unknown botanical origin. From Paraguay, through the Field Museum of Natural History.

Dye-stuffs and Other Coloring Matters

The tissues of many plants contain substances which are capable of imparting definite colors to fabrics and other substances, when treated with them in various ways. Certain families, such as the *Rubiaceae*, or madder family, and the Boraginaceae, or borage family, are especially rich in such plants. Usually the possession of such coloring matters is restricted to certain parts, and different parts of the same plant may contain different coloring matters. The color produced in dyeing by the use of a coloring matter is usually not the same as that imparted by it to the plant that contains it. Often, the plant tissue containing it will exhibit no particular color. As a rule, the coloring matter can be caused to yield more than one color in dyeing, by combining it with other substances, or by varying the method of its use. Vegetable tissues containing useful coloring matters are called dye-stuffs. In many cases, they are used in their entirety, while in others the coloring matter is extracted in a more or less purified form before marketing.

1263. A mixture of lichens from which litmus is manufactured.
1264. False orchella weed.—Plants of *Roccella fruticosa* Lauer (*Roccellaceae*—Roccella Family). Native of California. From the New York College of Pharmacy.

1265. False orchella weed.—Plants of *Roccella Montagnei* Bel (Same family). Native of the East Indies. From the British Pharmaceutical Society.

1266. Cudbear. The same as number 1263, in the ground condition. Presented by Merck & Company, of New York.

1267. Litmus. Lacmus.—A coloring matter extracted from the preceding lichens. Same donor.

1268. Litmus or lacmus of highest purity. A more refined coloring extract prepared from the preceding. The same donor.

1269. Japanese seaweed.—Plants of a species of *Gloiopeltis* (*Gloiosiphoniaceae*—Gloiosiphonia Family). Native of Japanese coast waters.

1270. Crocus. Spanish saffron. Saffron.—The stigmas of *Crocus sativus* L. (*Iridaceae*—Iris Family). Native of Europe and cultivated. From the New York drug market. Presented by H. H. Rusby.

1271. Crocin.—The coloring matter extracted from the preceding.

1272. Kumuru bark.—The bark of *Juglans japonica* Siebold (*Juglandaceae*—Walnut Family). Native of Japan, where it is used in dyeing.

1273. Fustic wood.—The wood of *Chlorophora tinctoria* (L.) Gaud. (*Moraceae*—Mulberry Family). Native of tropical America and cultivated.

1274. Fustic extract.—An extract used in dyeing, made from the preceding.

1275. Maclurin.—The coloring matter extracted from the preceding. Presented by Merck & Company.

1275.1. Lomatia seeds.—The seeds of *Lomatia tinctoria* R. Br. (*Proteaceae*—Protea Family). Native of Australasia. Used in dyeing. Presented by L. Rodway, of Hobart, Tasmania.

1275.2. Lomatia seeds.—The seeds of *Lomatia polymorpha* R. Br. (Same source and donor as of the preceding).

1275.3. Telopea fruits.—The fruits of *Telopea truncata* R. Br. (Same family). Same source and donor as of the preceding.

1276. Pokeberries.—The fruit of *Phytolacca americana* L. (*Phytolaccaceae*—Pokeberry Family). Native of tropical America, and now a cosmopolitan weed. Juice used to color wines.

1277. Peony flowers.—The petals of *Paeonia officinalis* L. (*Ranunculaceae*—Buttercup Family). Native of Asia and cultivated. Presented by J. L. Hopkins & Company, New York.

1278. Papaver Rhoeas. Red poppy petals.—The petals of *Papaver Rhoeas* L. (*Papaveraceae*—Poppy Family). Native of Europe and cultivated.

1279. Hungarian woad or pastel.—An extract made from *Isatis tinctoria* L. (*Cruciferae*—Mustard Family). Native of Europe and Asia. Sample manufactured in Hungary and heavily adulterated with earthy matter. From the New York drug market. Presented by H. H. Rusby.

1280. Pernambuco Brazil-wood.—The heart-wood of *Caesalpinia echinata* Lam. (*Caesalpiniaceae*—Senna Family). Native of Brazil. A very important dye wood. Presented by Merck & Co., of New York City.

1281. Bahia Brazil-wood. Probably derived from another Brazilian species of *Caesalpinia*.

1282–1290. Logwood.—This is the heart-wood of *Haematoxylon campechianum* L. Same family as last. Native of Central America and cultivated in tropical countries. Unless otherwise specified, these samples were donated by the

Department of Public Gardens and Plantations of Jamaica, West Indies.

1282. Logwood of good quality.

1283. Logwood roots.

1284. Another sample of same.

1285. Sapwood of the logwood tree. It contains no coloring matter and is worthless.

1286. Red logwood. For some unknown reason, it contains no coloring matter and is worthless.

1287. Blue logwood. So called because of the bluish-green tint of the foliage.

1288. Old and worthless logwood. This is too old to contain its coloring matter and should have been cut previously.

1289. Another sample of the same.

1290. Bastard logwood. Another variety which contains no coloring matter for no known reason, and which is worthless.

1291. Red sandal-wood or Red Saunders.—The heart-wood of *Pterocarpus santalinus* L. f. Same family. Native of the East Indies. Presented by Merck & Company, of New York City.

1292. Santalin or santalic acid. The coloring matter extracted from the preceding. Same donor.

1293. Indigo plant.—The herbage of *Indigofera Anil* L. and other species of *Indigofera*. (*Fabaceae*—Pea Family.) Native of tropical America and cultivated. Presented by H. H. Rusby.

1294. Crude indigo. A crude extract prepared from the preceding.

1295. Bengal indigo. Manufactured in Bengal. Presented by Merck & Company, of New York City.

1296. Another sample of the same of inferior quality.

1297. Baptisia. Wild indigo. Dyer's green-weed.—The herbage of *Baptisia tinctoria* L. Native of eastern North America. Used for dyeing, as a substitute for indigo.

1298. Kiwaba bark.—The bark of *Phellodendron amurense* Royle (*Rutaceae*—Rue Family). Native of eastern Asia. From Japan.

1299. Pitti.—The bark of the root of *Ventilago maderaspatana* Gaertn. (*Rhamnaceae*—Buckthorn Family). Native of the East Indies. From British India, through the Field Museum of Natural History.

1300. Blue mallow flowers.—The flowers of *Malva sylvestris* L. (*Malvaceae*—Mallow Family). Native of Europe and cultivated. From the New York drug market.

1301. Hollyhock flowers, with calyx and epicalyx.—The flowers of *Althea rosea* (L.) Cav. (*Malvaceae*—Mallow Family). Native of Europe and everywhere cultivated for ornament. Presented by Merck & Company, of New York.

1302. The same, without calyx. Presented by H. H. Rusby.

1303. Annatto.—A fruiting branch of *Bixa Orellana* L. (*Bixaceae*—Annatto Family). Native of tropical America and cultivated. Collected on the upper Rio Negro by Weiss and Schmidt.

1304. Annatto pods. The fruits of the same plant.

1305. Annatto seeds. The seeds of the preceding.

1306–1307. Native extracts from the preceding. Made by the Indians of the upper Rio Negro. Same source as the preceding.

1308. Sweet violet or blue violet flowers.—The flowers of *Viola odorata* L. (*Violaceae*—Violet Family). Native of Europe and everywhere collected for ornament and for perfumery. Used for coloring.

1309. Ayrampo.—The seeds of *Opuntia Soehrensii* Britton & Rose (*Cactaceae*—Cactus Family). Native of the west coast of South America. Used for the coloring of wines. Acquired in Arequipa, Peru, August, 1914, by J. N. Rose.

1310. Lodh bark.—The bark of *Symplocos crataegoides* Buch.—Ham. (*Symplocaceae*—Symplocos Family). Native of the East Indies. From British India, through the Field Museum of Natural History.

1311. Alkanet root.—The root of *Anchusa officinalis* L. (*Boraginaceae*—Borage Family). Native of southern Europe and cultivated. An important dye product, used for dyeing other fabrics than wool of a red, violet, or gray color. Presented by Lehn & Fink, of New York City.

1312. Viper's bugloss. Blue weed. Blue devil.—The entire plant, *Echium vulgare* L. (Same family.) Native of Europe and introduced into the United States. Used for dyeing. Collected by H. H. Rusby near Hudson, New York, June 27, 1919.

1313. Color. Raiz de color.—The root of *Escobedia scabrifolia* R. & P. (*Scrophulariaceae*—Figwort Family). Native of tropical America. Acquired in the market of Bogota in August, 1917, by H. H. Rusby.

1314. Madder.—The roots of *Rubia tinctoria* L. (*Rubiaceae*—Madder Family). Native of the Mediterranean region and cultivated. A very important dye. Presented by Lehn & Fink, of New York City.

1314.1. Shan-chi-tze.—The fruits of *Gardenia jasminoides* Ellis (Same family). Native of China. Yields a yellow dye. From the Field Museum of Natural History.

1315. Muto.—The unripe fruit of a species of *Genipa.* (Same family.) Native of South America. From Peru. Used in a hair-dye. Presented by D. F. Larremore, of New York City.

1316. Muto juice. The juice of the preceding fruit. Same donor.

1317. Morinda bark.—The bark of *Morinda citrifolia* L. Grown in British India and used for dyeing

1318. Calendula or marigold flowers.—The florets of *Calendula officinalis* L. (*Carduaceae*—Thistle Family). Native of Europe and cultivated. Used for coloring, especially in medicinal preparations. From the New York drug market.

1319. Calendulin.—The coloring matter extracted from the preceding.

1320. Carthamus, safflower, or American saffron.—The florets of *Carthamus tinctoria* L. Same family and source. Native of India and cultivated. Similarly used and also largely used as a spurious substitute for genuine saffron.

1321. Cake Carthamus.—The preceding, pressed into cakes. Presented by Merck & Company.

1322. Carthamin.—The coloring matter extracted from the preceding.

1323. Blue corn-flowers.—The florets of *Centaurea Cyanus* L. (Same family.) Native of Europe and cultivated. Used for coloring purposes. From the New York drug market. Presented by H. H. Rusby.

TANNING MATERIALS

Tanning materials are employed in changing animal skins into leather. This is chiefly the effect of the tannic acid contained in the agents upon the tissues of the skin, but another important action is that of filling up the minute cavities of the skins, to make the leather firm and compact.

THE PINE FAMILY (*Pinaceae*)

1324. Hemlock bark.—The bark of *Tsuga canadensis* (L.) Carr. Native of eastern North America. Collected in the New York Botanical Garden by P. Wilson in July, 1899.
1325. Episcia bark.—The bark of *Picea Abies* (L.) Karst. Native of Europe. From Hungary, through the Paris Exposition of 1900.
1326. Another sample of the same, of best quality.
1327. The same, of second quality.
1328. The same, ground and ready for use.
1329. Pino bark.—The bark of a Spanish species of *Pinus*, or pine, ground and ready for use.
1330. Saw-palmetto trunk. (See number 391.) Collected at Miami, Florida, in 1904, by J. K. Small.
1331. The same, ground ready for extraction.
1332. Saw palmetto extract.—A tanning extract prepared from the preceding.
1333. Spent saw-palmetto wood.—The ground wood after the extract is removed.
1334. Saule. Willow bark.—The bark of *Salix acutifolia* Willd. (*Salicaceae*—Willow Family). Native of northeastern Asia. From Russia, through the Paris Exposition of 1900.
1335. The same, in a ground condition.
1336. French saule.—The bark of a French species of *Salix*. From the Paris Exposition of 1900.
1337. Aune, or alder bark.—The bark of a species of *Alnus*, probably *A. glutinosa* (L.) Medic. (*Betulaceae*—Birch Family). Native of France. From the Paris Exposition of 1900.

THE BEECH FAMILY (*Fagaceae*)

1338. Rock, or white, chestnut-oak bark.—The bark of *Quercus Prinus* L. Native of eastern United States. Collected at Mount Airy, North Carolina, June 20, 1909, by H. H. Rusby (see Herb.).
1339. Another sample of the same. Collected by H. H. Rusby at upper Montclair, New Jersey, July 3, 1919.
1340. Chene.—The bark of an oak, probably *Quercus Robur* L. Native of Europe. From France, through the Paris Exposition of 1900.
1341. Kashiwa bark.—The bark of *Quercus dentata* Thunb. Native of eastern Asia. From Japan.
1342. Konara bark.—The bark of *Quercus glandulifera* Blume. Native of eastern Asia. From Japan.

1342.1. Encino bark.—Probably the bark of a species of *Quercus*, of southern Europe.

1343. Vallonea. Acorn cups.—The involucres of the fruits of a Chinese species of *Quercus*, related to *Q. Bungeana* Forbes. Imported into New York by the Chinese. Presented by H. H. Rusby.

1344. Vallonea extract.—An extract made from various species of acorn cups of the Mediterranean region. Imported into New York for tanning. Presented by H. H. Rusby.

1345. California oak galls.—Galls collected from *Quercus lobata* Nees. Native of California. From the New York College of Pharmacy. Galls are excrescences caused to form on living vegetable tissue by the punctures and deposited eggs of various species of insects. In due time, the eggs hatch and the larvae coming from them live within the gall until they are ready to emerge into the open air. Galls are usually rich in tannin (tannic acid) and some of them are employed as tanning agents.

1346. French oak galls.—Galls collected from *Quercus Robur* L. (See number 1340.) From Biaretz, France. Used for making ink, as well as for tanning. Presented by L. M. Underwood.

1347. Aleppo, or Syrian, galls, or nut-galls.—Galls collected from *Quercus lusitanica* Lam. and other species of *Quercus*. Native of Syria. From the New York drug market. Presented by Duche & Sons, of New York.

1348. Another sample, of inferior quality. Presented by H. H. Rusby.

1349. White Syrian galls.—Same as the preceding, but over-ripe and inferior, the insects having escaped from the cavity by boring a hole to the surface. Same source.

1350. Ground nut-gall. Nut-gall in the ground state. Presented by H. H.Rusby.

1350.1. Morea galls.

1351. Kuri or Japanese chestnut bark.—The bark of *Castanea crenata* Sieb. and Zucc. Native of eastern Asia. From Japan.

1352. Hetre. European beech.—The bark of *Fagus grandifolia* Ehrh. Native of Europe. From France, through the Paris Exposition of 1900.

1353. Canaigre.—The root of *Rumex hymenosepalus* Torrey (*Polygonaceae*—Knotweed Family). Native of the southwestern United States and cultivated. From wild plants of Texas. Presented by Lehn & Fink, of New York City.

1354. The same, from cultivated plants from three to five months old. Same source and donor.

1355. The same, from cultivated plants two years old. Same source and donor.

1356. Sakura.—The bark of *Prunus Pseudo-Cerasus* Lindley. (*Drupaceae*—Plum Family.) Native of eastern Asia. From Japan.

THE SENSITIVE-PLANT FAMILY (*Mimosaceae*)

1357. Palo blanco. White tree.—The bark of *Lysiloma candida* Brandegee. Native of the southwestern United States and Mexico. Collected by J. N. Rose at Agua Verde, Lower California, April 1, 1911.

1358. Albizzia bark.—The bark of *Albizzia stipulata* Poir. Native of the East Indies. From British India.

1359. Algaroba negra.—The bark of *Prosopis juliflora* (Sw.) DC. Native of tropical America. Specimen from Paraguay, through the Field Museum of Natural History.

1360. Another sample of the same, or of a closely related species, of lighter color. Same source.

1361. Algaroba colorado bark.—The bark of *Prosopis alba* Griseb. Native of South America. Same source as the preceding.

1362. Wattle bark.—The bark of *Acacia decurrens* Willd. Native of Australia. From the New York drug market. Presented by H. H. Rusby.

1363. Catechu. Cutch.—An extract made by boiling the heart-wood of *Acacia Catechu* (L.) Willd. Native of the East Indies.

1364. Colombian catechu or cutch.—An extract prepared by boiling the wood of an undetermined tree, probably of this family, growing near Cartagena, Colombia. Presented by A. E. Heighway, of New York City.

1365. Saman bark.—The bark of *Pithecolobium Saman* (Jacq.) Benth. Native of tropical America and cultivated. From Guatemala, through the Field Museum of Natural History.

1366. Tatame.—The fruit of *Pithecolobium scalare* Griseb. Native of tropical America. From Paraguay, through the Field Museum of Natural History.

1367. Teri pods.—The fruits of a species of *Pithecolobium*, broken transversely into one-seeded joints. Presented by Gravenhorst & Company, of New York.

1368. Garad.—Another sample of the same or of a closely related species.

1369. Timbo colorado. Red timbo.—The fruits of a species of *Pithecolobium*. No collection data.

1370. Divi-divi pods.—The fruits of *Caesalpinia coriaria* (Jacq.) Willd. (*Caesalpiniaceae*—Senna Family). Native of tropical America. From St. Thomas, West Indies. Collected by N. L. Britton, February, 1913. (See Herb.)

1371. Another sample of the same.

1372. Guayacan.—The fruits of *Caesalpinia melanocarpa* Griseb. Native of Argentina. From the Field Museum of Natural History.

THE SUMAC FAMILY (*Anacardiaceae*)

1373. Smooth sumac leaves.—The leaves of *Rhus glabra* L. Native of eastern North America. Collected at Newark, New Jersey, by H. H. Rusby, September, 1918.

1374. Stag-horn sumac leaves.—The leaves of *Rhus hirta* (L.) Sudw. Native of northeastern North America. Collected at Oscawanna Lake, New York, by H. H. Rusby, September, 1918.

1375. Stag-horn sumac bark.—The bark of the preceding species. Collected by H. H. Rusby at Marlboro, New Hampshire, July 23, 1919.

1376. Dwarf, or black, sumac leaves.—The leaves of *Rhus copallina* L. Native of the eastern United States. Collected by P. Wilson, in the New York Botanical Garden, September, 1918.

1377. Zumaque Curtiente.—The leaves of *Rhus coriaria* L. Native of the Mediterranean region. From Spain.

1378. Chinese galls. Japanese galls.—Galls produced on the stems of *Rhus semialata* Murr. Native of eastern Asia. Presented by H. H. Rusby.

1379. Quebracho colorado. Schinopsis bark.—The bark of *Schinopsis Balansae*

Engler. Native of tropical America. From Paraguay, through the Field Museum of Natural History.

1380. The wood of the same.

1381. Quebracho extract.—An extract made by boiling the preceding wood. From Paraguay, through the Field Museum of Natural History.

1382. Another sample of the same, containing 70% of tannic acid. From Puerto Cosado, Argentina.

1383. Liquid Quebracho extract.—The same as the preceding but in a liquid state. From the New York drug market. Presented by H. H. Rusby.

1384. Tanner's sumac.—The fruit of *Coriaria myrtifolia* L. (*Coriariaceae*—Coriaria Family). Native of the Mediterranean region. From the Paris Exposition of 1900.

1385. Plong bark. Mangrove bark.—The bark of *Rhizophora Mangle* L. (*Rhizophoraceae*—Mangrove Family). Native of tropical coasts and coastal river-banks. From Siam.

1386. Another specimen of the same. Bark as brought to the factory of the Manetoo Company in Miami, Florida, by whom it was presented.

1387. The same after being ground. Same donor.

1388. Mangrove tanning extract. An extract prepared from the preceding by boiling in water. Same donor.

1389. Spent mangrove bark.—Ground mangrove bark after extraction. Same donor.

1390. Long myrobalans. Chebula. Ink-nuts.—The fruits of *Buceras Chebula* (Retz) Lyons (*Combretaceae*—Combretum Family). Native of India and introduced into most tropical regions. Presented by H. H. Rusby.

1391. Round myrobalans. Belliric myrobalans.—The fruits of *Buceras Bellirica* (Gaertn.) Lyons. (Same family.) Native of the East Indies. Presented by H. H. Rusby.

1392. Frene, or Ash, bark.—The bark of a species of ash of southern Europe, probably of *Fraxinus excelsa* L. (*Oleaceae*—Olive Family). From France through the Paris Exposition of 1900.

1393. Toneriko bark.—The bark of *Fraxinus Bungeana* A. DC. Native of eastern Asia. From Japan.

1394. The bark of *Aspidosperma latisiliqua* A. DC. (*Apocynaceae*—Dogbane Family). Native of tropical America.

1395. The preceding, in the ground state.

Flavoring Agents, Condiments, and Spices

Flavoring agents are substances, mostly of vegetable origin, added to foods or other substances taken into the stomach, to impart an agreeable flavor or to mitigate or remove a disagreeable one. They are sometimes extracted from the plant tissue for such use, while at other times, the tissue containing them is used. These constituents of plants are of varied chemical nature and sometimes are

nutritious in themselves. Highly flavored foods are not the most wholesome and their use cannot be so general nor long-continued as others. A craving for them is not an indication of good health. Frequently they are used to tempt or stimulate the appetite of persons who are not in need of food and who would be benefitted by omitting it.

Condiments are flavoring agents of very strong flavor, with which is usually associated more or less pungency, so that they are capable of exerting a strong stimulus upon the appetite and digestion. Their continuous moderate use is not inconsistent with a state of health, nor is it necessarily injurious. Their excessive or unnecessary use tends generally toward the weakening of the natural healthy functions of nutrition. When, however, the appetite or digestion is so impaired that the subject is threatened with deficient nutrition, the use of condiments is proper and often of great value. Condiments thus occupy a sort of intermediate position between ordinary flavoring agents and such medicines as bitters and other stomachics. The latter are remedial agents, used in case of impairment of health, while the former may be regarded as prophylactics, intended to prevent a threatened impairment.

THE GINGER FAMILY (*Zingiberaceae*)

1396–1404. Ginger.—The rootstock of *Zingiber Zingiber* (L.) Karst. Native of tropical Asia and cultivated in all tropical regions. Unless otherwise stated, the samples were presented by F. H. Leggett & Company, of New York.

1396. African ginger.—Ginger grown in Africa. This variety is prepared by stripping off the bark from the flat sides, dipping in boiling water to destroy its vitality, and drying. It is of excellent strength but dark-colored, and produces dark-colored preparations.

1397. The same in a ground condition.

1398. East Indian Race ginger.—Ginger produced in the East Indies and prepared like African ginger.

1399. The same in a ground state.

1399.1. Calicut ginger.—A variety of East Indian ginger, presented by H. H. Rusby.

1400. Unbleached Jamaica ginger.—This is the most expensive variety of commercial ginger, cultivated and prepared in Jamaica, West Indies. The rhizomes are very carefully dug to avoid bruising, then soaked in water and

then very carefully scraped so as to remove the whole of the outer bark. It is then dried with great care to avoid molding or discoloration and to avoid the loss of its volatile active constituents. Since the bark of ginger is the most active portion, this variety is not so strong as other gingers, but it yields preparations of a beautiful light color and very fine fragrance.

1401. The same, in a ground condition.

1402. Bleached Jamaica ginger.—This variety is produced in Jamaica by dipping the preceding in white-wash, which imparts a fine white color to the surface and tends to prevent insect attacks. Strictly speaking, it is a form of adulteration. This practice is also quite often resorted to for covering and concealing defects in the ginger.

1403. Japanese ginger.—Ginger grown and prepared in Japan. In this process, the outermost layers only of the bark are removed before drying. This accomplishes the same purpose as removing the entire bark, as practiced in Jamaica and, at the same time, the presence of the inner bark, which remains, tends to retain the entire strength and flavor of the ginger.

1404. Cochin ginger.—A variety of Chinese ginger. Prepared in much the same manner as the preceding.

1405. Zedoary or Zedoaria.—The rhizome of *Curcuma Zedoaria* Roscoe. Native of the East Indies and cultivated. From the New York drug market.

1406. Madras Curcuma or turmeric.—The rhizome of *Curcuma longa* L. Native of the East Indies and cultivated. Exported from Madras, British India.

1406.1. Pure powdered Curcuma. Presented by H. H. Rusby.

1407. Malabar cardamom pods.—The dried ripe fruits of *Elettaria repens* (Sonn.) Baill. Native of the East Indies and cultivated.

1408. Cardamom seeds.—The seeds removed from the preceding pods.

1409. The preceding, adulterated with the seeds of a species of *Amomum*.

1410. Melegueta pepper. Grains of Paradise. Guinea grains.—The seeds of *Amomum Melegueta* Roscoe. Native of western Africa. Presented by J. L. Hopkins & Company, of New York City.

1411. Another sample of the same. Presented by H. H. Rusby.

Vanilla and its Substitutes

Vanilla is the specially cured, nearly ripe fruit of *Vanilla planifolia* Andrews (*Orchidaceae*—Orchid Family), native of tropical America and cultivated in tropical regions. Some inferior fruit is produced by other species of Vanilla. Vanilla is produced in tropical countries, the best and highest-priced often coming from the mountains of Mexico. The poorest is sold for 50 to 75 cents a pound, the best for 12 to 15 dollars. Fineness, rather than strength, of odor determines the value, and this depends upon the variety, the climate, the cultivation, and the method and care employed in curing. The wild product is the poorest.

In cultivation the flowers are pollinated by hand. The fruits, resembling slender green bananas, are gathered before quite ripe and are exposed to a steam-sweating by various devices. They are then exposed to the sun each day, and wrapped in woolen blankets at night, for some time. By this process the odorous substance vanillin is developed. The vanillin may all be in the body of the vanilla ("brown beans"), or it may coat its surface in the form of shining white crystals ("frosted beans"). Before this curing process, vanilla contains no vanillin and has no special fragrance or flavor. Unless otherwise specified, the specimens in this exhibit were presented by Dodge & Olcott, of New York City.

1412. Leafy branch of *Vanilla planifolia* Andrews. From Mexico. Presented by Dodge & Olcott, of New York City.
1413. A fresh unripe fruit of the same plant. Same source and donor.
1414[22]. Picture of a vanilla plantation.
1415. That of a flowering vanilla plant.
1416. Pollinating the flowers, or fecundation.
1417. The vanilla beans on the vine.
1418. Gathering the beans.
1419. Drying and curing.
1420. Assorting and bundling.
1421. Fine Mexican vanilla.
1422. Fancy braided specimen of the same.
1423. Vanilla splits.—Beans which became so nearly ripe before collection that they had begun to split open at the tip.
1424. Cut Mexican vanilla.—Consists of inferior beans, of poor appearance, and the good portions of beans from which the useless portions have been cut away.
1425. Tehuantepec vanilla.—Vanilla grown upon the Isthmus of Tehuantepec, Central America.
1426. Bourbon vanilla, bundled in Mexican style.—This form of bundling is resorted to in order that this article can be sold as Mexican vanilla.
1427. Commercial Bourbon vanilla.
1428. Seychelles vanilla, bundled in Mexican style.—Vanilla produced at the Seychelles Islands and bundled to imitate the Mexican vanilla.
1429. Commercial Seychelles vanilla.
1430. Mauritius vanilla.—Vanilla produced on the Island of Mauritius, West Indies.
1431. Java vanilla.

[22] Numbers 1414–1420 comprise a series of pictures representing the vanilla-producing industry, and were presented by J. Mannheimer, of New York City.

1432. Guadeloupe vanilla.—Produced on the Island of Guadeloupe.
1433. Vanilla grown in Australia.
1434. Comoris vanilla. Grown in the Comora Islands, West Africa.
1435. Tahiti vanilla, German bundling.
1436. The same, native bundling.
1437. The same, French bundling.
1438. Venezuelan wild vanilla.—Probably the product of *Vanilla Pompona* Scheide.
1439. Pompona vanilla. Pompons. The product of the preceding species, collected from wild plants in Mexico.
1440. Vanillones.—Vanilla produced from an undetermined wild species of Mexico. Numbers 1441–1447 represent vanilla substitutes.
1440.1. Vanilla syrup. Syrup flavored with vanilla. Presented by the J. Hungerford Smith Company, of Rochester, New York.
1441. Tonka, or Tonquin, bean. Dipteryx.—The specially cured seed of several species of *Coumarouna* (*Fabaceae*—Pea Family). Native of tropical America and cultivated. Tonka-bean contains the odorous principle coumarin, very similar to vanillin, and therefore used largely as a vanilla substitute. Coumarin occurs also in many other plants, a number of which are here exhibited.
1442. Coumarin. Cumarin. Cumaric anhydride. Tonka-bean camphor. The flavoring constituent of Tonka-bean, and also occurring in many other plants.
1443. The same in the crude or unrefined state.
1444. Sweet-scented vernal grass. Vanilla grass. (See number 285.)
1445. Yellow melilot or sweet clover. Hart's clover. King's clover. The herbage of *Melilotus officinalis* (L.) Lam. (*Fabaceae*—Pea Family). Native of Europe and Asia and naturalized in the United States. Contains coumarin.
1446. White sweet clover.—The herbage of *Melilotus alba* Desv. Similar to the preceding.
1447. Deer-tongue leaves. Vanilla leaf.—The leaves of *Trilisia odoratissima* (Walt.) Cass. (*Carduaceae*—Thistle Family). Native of the southeastern United States. Contains coumarin.
1448–1473.[23] Products of the pepper plant, *Piper nigrum* L. (*Piperaceae*—Pepper Family). Native of the East Indies and cultivated in tropical countries. This plant is a woody climber, creeping over the ground and sending up stems which climb the neighboring trees or the poles placed for them to grow upon. The fruits grow in racemes or strings somewhat like currants. For producing black pepper, they are allowed to become nearly ripe, when they are of a yellowish-red color. They are then gathered, stripped from their stems, and dried in the sun. The outer portion is fleshy, like that of a cherry, inside of which is a stone like a cherry stone, containing a single seed.

For the making of white pepper, any one of three methods may be employed. First, the fruits may be gathered and dried while they are still very young and green. Second, the pulpy covering of the stone may be rubbed off while the fruit is still fresh, this dried stone constituting the

[23] Unless otherwise specified, the remaining specimens in this spice collection were presented by Francis H. Leggett & Company, of New York City.

white pepper. Third, the commercial dried black pepper may be run through rollers, which grind off the outer fleshy portion, leaving the stone, which constitutes machine white pepper.

1448. Ordinary commercial black pepper, produced in the East Indies and known as "Aleppy" pepper.

1449. The same, ground.

1450. Singapore black pepper. Produced at Singapore and presented by Boustead & Company, of Singapore.

1451. The same, ground.

1452. Tellicherry black pepper. A fine variety of the same. Presented by Gravenhorst & Company, of New York City.

1453. Sumatra black pepper, grade A.

1454. The same, grade B.

1455. The preceding in a ground condition.

1456. The same, grade C.

1457. Lampong black pepper.

1458. The same ground.

1459. Acheen black pepper.

1460. Dark-colored pepper shells.—The outer layer of the fleshy portion of commercial black pepper, as removed for the making of white pepper.

1461. Light-colored pepper shells.—The inner layer of the fleshy outer covering of commercial black pepper, as ground off to make white pepper.

1462. Black-pepper siftings.—The refuse matters sifted out of black pepper in cleaning it for the market.

1463. Refuse material resulting from the grinding of black pepper.

1464. Native or Singapore white pepper.—The putamen of *Piper nigrum* L. from the ripe fruit of which the fleshy portion has been rubbed off while in the fresh condition. Produced in Singapore. Presented by Boustead & Company, of Singapore.

1465. Muntok white pepper.—The same, produced in Muntok. Same donor.

1466. Penang white pepper.—The same, produced at Penang.

1467. The preceding, in a ground condition.

1468. Machine decorticated white pepper.—Produced by milling off by machinery the outer fleshy portions from commercial dried black pepper.

1469. Another sample of the same.

1470. The same, in a ground condition.

1471. White pepper siftings.—The chaffy portions winnowed out from white pepper to clean it for the market.

1472. Piperidine.—The principal pungent constituent of black and long peppers. An alkaloidal substance.

1473. Piperine. An alkaloid obtained from the preceding.

1474. Long pepper.—The unripe fruit of *Chavica officinalis* Miq. Native of Java and cultivated. Presented by Boustead & Company, of Singapore.

1475. Another sample of the same.

THE NUTMEG FAMILY (*Myristicaceae*)

1476. Nutmeg fruits.—The entire fruit of *Myristica fragrans* Houtt. Native of the Mollucca Islands and cultivated in tropical regions. The specimens

show the pericarp split open, exhibiting the nutmeg, surrounded by the mace. Grown in the Trinidad Botanical Garden and presented by J. H. Hart.

1477. Nutmegs bearing their mace or arillode. Collected by N. L. Britton at Bath, St. Thomas, West Indies.

1478. Banda mace.—The arillode of the seed of the preceding. Presented by Boustead & Company of Singapore.

1479. Another specimen of the same.

1480. Penang mace. The same produced at Penang.

1481. The same in a ground condition.

1482. Padang mace. Presented by H. H. Rusby.

1483. Minador mace. Same donor.

1484. Bombay, or wild, mace.—The arillode of the seed of *Myristica fatua* Houtt. Native of the Spice Islands and cultivated. Used as a spurious substitute for and adulterant of genuine mace.

1485. The same in a ground condition.

1486. Macassar mace. Origin and use same as in No. 1484.

1487. The same in a ground condition.

1488. Brown nutmeg.—Nutmegs with the testa removed, but without the application of lime to the surface. Presented by Boustead & Company.

1489. Another sample of the same.

1490. Dutch or limed nutmegs.—The preceding which have been dipped in milk of lime or whitewash. It is said that this habit originated with the Dutch in order to prevent competition in their growth and production by other countries. It was on this account that the article received the name of Dutch nutmeg. It is also claimed that this custom originated with the idea of preventing insects from attacking the nutmegs. Presented by Boustead & Company, of Singapore.

1491. Another sample of the same.

1492. Another, of poorer quality.

1493. Singapore limed nutmeg. Presented by H. H. Rusby.

1494. Ground nutmegs.

1495. Wild, male, Macassar, or long, nutmegs.—The kernels of the seed of *Myristica fatua* Houtt. Native of the Mollucca Islands and used as a spurious substitute for and adulterant of genuine nutmegs. Specimen from the New York market. Presented by H. H. Rusby.

1496. Brazilian nutmegs.—The kernel of the seed of *Myristica surinamensis* Roland. Native of the Antilles and northeastern South America. Sometimes used as a substitute for or adulterant of nutmegs.

1497–1511. Cinnamon.—The bark, either entire or with the outer layers removed, of various species of *Cinnamomum* (*Lauraceae*—Laurel Family). They are natives of tropical regions in the East Indies. Numbers 1497 and 1498 represent Ceylon cinnamon, which is the inner bark of *C. zeylanicum* Blume. Some Ceylon cinnamon is collected from wild trees, although most of it is from cultivated sources. For its production, the plants are allowed to grow to an age of two or three years, when the stems are one or two inches in diameter. The bark is then removed in quills of two or three

feet in length and allowed to lie and wilt for a day or so. The quills are then taken separately and flattened upon a stone or block, with the outer portion uppermost. A bone or wood knife is then used for scraping off the soft outer layers of the bark. Metal cannot be used in this process, because the tannic acid in the bark would produce a black discoloration on coming into contact with the iron of the knife. A number of sheets of the scraped bark are then laid one upon the other and all are rolled together in a single quill, carefully dried in the shade and tied into large rolls for the market.

1497. Fine sample of Ceylon cinnamon in quills.

1498. The same ground.

1499–1511. Cassia cinnamon or Cassia bark.—This variety of cinnamon is derived from some 10 or more species of *Cinnamonum*, that of the different species varying greatly in quality. It is prepared by removing the bark from the stems in the same manner as that of Ceylon cinnamon, but instead of carefully scraping off the outer bark, this is roughly removed with a plane, considerable portions of it being allowed to remain. Since the outer bark of cinnamon usually contains much tannin and some bitter principle, even the best of such cinnamon is very inferior to that of Ceylon.

1499. Good quality of Cassia cinnamon. Derived from *Cinnamomum Cassia* Blume. From the East Indies.

1500. The same, in a ground condition.

1501. Java Cassia. Same as the last, but grown in Java.

1502. An inferior grade of the same, produced from old stems.

1503. Batavian Cassia.—A very fine, carefully peeled variety of Cassia, produced at Batavia.

1504. Chinese mats of Cassia.—The poorest quality of Cassia bark. Produced and packed in China and usually more or less adulterated by the intentional addition of sand, as well as of fragments of the waste portions.

1505. Cassia buds.—The unripe fruit of *Cinnamomum Cassia* Blume. These fruits possess the fine flavor of cinnamon, together with a much sweeter taste.

1506. The preceding in a ground condition.

1507. Saigon cinnamon (Number 1. Thin).—The entire bark of an undetermined species of *Cinnamomum*. Native of China. This cinnamon does not possess so strong an aroma as does the Ceylon variety, but it contains much more sugar and is remarkably free from astringency and bitterness. It is perhaps to be regarded as a superior kind of Cassia.

1508. Saigon cinnamon (Number 1. Medium).—This grade is a little thicker than the preceding and is not of quite so good a quality.

1509. Saigon cinnamon (Number 1. Thick).

1510. False or spurious Saigon cinnamon.—The bark of an undetermined species of *Cinnamomum*. Native of southeastern China. It closely resembles Saigon cinnamon, but is of very inferior quality.

1511. Saigon cinnamon in a ground condition.

1511.1. South American cinnamon. Canelo.—The bark of a species of *Acrodiclidium*. Native of Ecuador, collected by J. N. Rose.

1512. Royal bay leaves.—The leaves of *Laurus nobilis* L. (*Lauraceae* —Laurel Family). Native of the Mediterranean regions and widely cultivated.

These are the original bay leaves, although the name more appropriately belongs to the leaves of *Amomis caryophyllata*, from which bay rum is made. (See No. 1942.) The laurel leaf here represented is the bay leaf commonly used for flavoring foods.

1513. Laurel berries. The fruits of the same species. Presented by H. H. Rusby.

1514. Sassafras bark.—The bark of the root of *Sassafras Sassafras* (L.) Karst. Native of eastern North America. Largely used both as a medicine and as a flavoring agent. From the New York drug market.

1515. Sassafras stem-bark.—The bark of the trunk of the preceding. It is sometimes wrongly substituted for the root-bark. Collected by H. H. Rusby at Franklin, New Jersey.

1516. Safrol.—The principal aromatic constituent of sassafras. This article is largely used as an aromatic and is also the basic substance from which a number of artificial aromatics are manufactured by chemical processes.

1517. Blue poppy seed.—The seed of a variety of *Papaver somniferum* L. (*Papaveraceae*—Poppy Family). Native of the Orient and cultivated. From the New York market. Presented by H. H. Rusby.

1518. White poppy seed.—Another variety of the preceding.

THE MUSTARD FAMILY (*Cruciferae*)

1519. Black, or red, mustard.—The ripe seeds of *Brassica nigra* (L.) Koch. Native of Europe and Asia and cultivated in all temperate regions. Specimen from the New York market. Presented by H. H. Rusby.

1520. Ground black mustard.—Black mustard seeds ground for use as a condiment.

1521. Prepared mustard.—Ground mustard mixed into a paste for use upon the table. Pure, ground, black mustard is generally regarded as too powerful for use; hence other aromatic substances are usually mixed with it in the manufacture of prepared mustard.

1522. White mustard.—The ripe seeds of *Brassica alba* (L.) Boiss. Native of Europe and Asia and largely cultivated in temperate and subtropical regions. This variety yields the same fixed or expressed oil as that of black mustard, but it does not yield the volatile oil of mustard. It is less powerful as an irritant than black mustard.

1523. Colza seed.—The seed of a variety of *Brassica campestris* L. Native of Europe and cultivated. From the New York drug market. Sometimes used to adulterate mustard. Presented by H. H. Rusby.

1524. Rape seed.—The ripe seed of *Brassica campestris* L. Native of Europe and Asia and largely cultivated. This seed is very slightly pungent and is mostly used for the expression of its fixed oil, and for feeding birds. It has also been largely used as an adulterant of ground mustards.

1525. Chinese mustard seed.—The seed of *Brassica chinensis* L. Native of China and cultivated. Sometimes used to adulterate mustard. From the New York drug market. Presented by H. H. Rusby.

1526. Horse-radish.—The root of *Armoracia Armoracia* (L.) Cockerell. Native of Europe and widely cultivated as a condiment. Presented by Frank Weinberg.

1527. Ground horse-radish.—Horse-radish ground and mixed with vinegar ready for use upon the table. Presented by H. H. Rusby.

1528. Water cress.—The herbage of *Sisymbrium Nasturtium-aquaticum* L. Native of Europe and cultivated in all temperate and subtropical regions. Used as a salad and a garnish. Collected by H. H. Rusby at Nutley, New Jersey.

1529. Pepper grass.—The herbage of *Lepidium virginicum* L. Native of Europe and America. Collected by H. H. Rusby at Nutley, New Jersey.

1530. Capers. Scriptural Hyssop.—The flower-buds of *Capparis spinosa* L. (*Capparidaceae*—Caper Family). Native of the Mediterranean region and cultivated as a condiment. Presented by F. H. Leggett & Company, of New York City.

1531. The same of larger size. Same donor.

1532. Bitter almonds.—The seeds of *Amygdalus amara* DC. (*Drupaceae*—Plum Family). Native of Persia and cultivated. From the New York drug market.

Licorice and Its Products

Licorice root is the root of *Glycyrrhiza glabra* L. or of *G. glandulifera* Waldst. & Kit., natives of the Mediterranean region of Europe and Asia. The name licorice is often applied to this root but more often to the extract made by boiling it in water, the water then being strained and evaporated so as to leave a black mass such as is seen in ordinary stick licorice. The specimens in this licorice collection, unless otherwise specified, were presented by Young & Smylie, of New York City.

1533. Spanish, Italian or Sicilian licorice root.—The root of *G. glabra* L. Native of southern Europe and largely cultivated in many countries.

1534. Australian licorice root.—The root of the preceding species, grown in Australia.

1535. Ground licorice root.—The root of the same produced in Greece and ground ready for extraction.

1536. Russian licorice root.—The root of *G. glandulifera* Waldst. & Kit. Grown in southeastern Russia.

1537. Syrian licorice root. The same, grown in Syria.

1538. Persian licorice root.—A poor quality of licorice root grown in Persia, probably of a distinct species.

1539. Spanish paste licorice.—A very fine variety of licorice extract.

1540. Greek licorice paste.—Another fine variety of licorice paste, in blocks.

1541. Manhattan licorice wafers.—The preceding, pressed into the form of wafers.

1542. Licorice lozenges.—The same, pressed in the form of lozenges.

1543. Acme licorice pellets.—The same, pressed in the form of pellets.

1544. Penny licorice sticks.—Ordinary quality of licorice extract, molded into small sticks.

1545. Corrugated licorice sticks.—Licorice sticks of fancy form.

1546. Pure Calabrian licorice extract.—The very finest variety of licorice extract.

1547. Laurel leaves and cherry laurel used as a packing for stick licorice.—The leaves of *Laurus nobilis* and *Padus laurocerasus*.

1548. Spent licorice root.—The refuse licorice root after its licorice has been extracted.

1549. Para Tonka-beans or Tonquin beans.—The ripe seeds of a species of *Coumarouna*, probably *C. oppositifolia* (Aubl.) Kuntze. (*Fabaceae*—Pea Family). Native of Brazil. This sample was produced in the Amazon Valley and exported from Para, Brazil. Presented by Dodge & Olcott, of New York.

1550. Surinam Tonka-beans.—The ripe seeds of another species of *Coumarouna*, probably *C. odorata* Aubl. Native of Guiana. This seed is prepared by the same process as the preceding. Same donor.

1551. Angustura Tonka-beans.—The same as the preceding grown in Venezuela.

1552. Ladies' sorrel or table sorrel.—The herbage of several species of *Xanthoxalis*. (*Oxalidaceae*—Woodsorrel Family.) Native of North America and sometimes cultivated. This plant is of interest as being the original source of oxalic acid, which is now chiefly prepared artificially. The plant is often used as a condiment or as an ingredient of salads. Collected in the New York Botanical Garden by J. A. Shafer.

1553. Wood sorrel. The herbage of *Oxalis Acetosella* L. Native of the north temperate zone. Used in salads. Collected by H. H. Rusby at Alder Lake, New York.

1554. Chocoyoles.—The herbage of a species of *Oxalis*. Acquired by H. H. Rusby in a market place near Mexico City, June 8, 1910.

1555. Nasturtium fruits.—The unripe fruits of *Tropaeolum majus* L. (*Tropaeolaceae*—Nasturtium Family). Native of tropical America and largely cultivated for decorative purposes. These fruits have an agreeable caper-like flavor and are used largely in salads and for pickles. Specimens collected by H. H. Rusby at Newark, New Jersey, from cultivated plants.

1556. Bitter orange peel.—The rind of the fruit of *Citrus amara* (L.) Hassk. (*Rutaceae*—Rue Family). Native of Asia and cultivated. From the New York market.

1557. Peruvian pepper.—The ripe fruits of *Schinus molle* L. (*Anacardiaceae*—Sumac Family). Native of Mexico and largely cultivated in dry tropical regions as an ornamental and shade tree. The fruits are often used as a substitute for pepper. Specimen collected at Redlands, California, August 26, 1909, by H. H. Rusby.

1558. Allspice or Pimenta.—The unripe fruit of *Pimenta Pimenta* (L.) Cockerell. (*Myrtaceae*—Myrtle Family). Native of tropical America and cultivated Largely used as a spice.

1559. Jamaica allspice or Pimenta.—The preceding, grown in the Island of Jamaica. Obtained by D. T. MacDougal, July, 1904.

1560. Ground allspice or Pimenta.—The preceding in a ground condition.

1561. Penang cloves or Caryophyllus.—The unexpanded flowers of *Eugenia aromatica* (L.) Kuntze. Same family. Native of the Molucca Islands and cultivated in tropical countries.

1562. The same, ground.
1563. Amboina cloves.—The same, cultivated at Amboina. Presented by Boustead & Company of Singapore.
1564. Another sample of the same.
1565. The same, ground.
1566. Zanzibar cloves. The same grown in Zanzibar.
1567. Pure ground Zanzibar cloves.
1568. Clove stalks.—The peduncles or stems on which three cloves usually grow. These stalks contain a small amount of oil of cloves and are used for distillation. They are often also ground up with cloves for purposes of adulteration.
1569. Exhausted cloves.—Cloves after the volatile oil has been distilled. Such substance is useless but is often ground in with cloves for purposes of adulteration.

THE CARROT FAMILY (*Ammiaceae*)

1570. Coriander. Coriandrum.—The unripe fruits of *Coriandrum sativum* L. Native of Asia and everywhere cultivated.
1571. Bleached coriander.—Coriander which has been put through a bleaching process in order to whiten it and give it a better appearance.
1572. Another specimen of the same. Produced at Singapore. Presented by Boustead & Company.
1573. Anisum. Anise.—The fruit of *Pimpinella Anisum* L. Native of Asia and Europe and everywhere cultivated.
1574. The same, ground.
1575. Another sample of the same, strictly pure.
1576. Carum. Caraway.—The unripe fruit of *Carum Carui* L. Native of Europe and Asia and largely cultivated.
1577. Apium. Celery fruits.—The fruit of *Celeri graveolens* (L.) Britton. Native of Europe and widely cultivated.
1578. Parsley.—The leaves of *Apium Petroselinum* L. Native of Europe and Asia and cultivated. From the trial grounds of Peter Henderson & Company.
1578.1. The same in a dried state. Presented by H. H. Rusby.

THE MINT FAMILY (*Labiatae*)

1579. Majorana. Marjoram.—The leaves of *Origanum Majorana* L. Native of of Europe and widely cultivated.
1580. The same, in a ground condition.
1581. Summer savory.—The leaves of *Satureia hortensis* L. Native of Europe and cultivated.
1582. The same, ground.
1583. Peppermint.—The leaves of *Mentha piperita* L. Native of the northern hemisphere and largely cultivated.
1584. Spearmint.—The leaves of *Mentha spicata* L. Native of the northern hemisphere and largely cultivated.
1585. Thymus. Thyme.—The leaves of *Thymus vulgaris* L. Native of Europe and largely cultivated.

1586. The same, ground.
1587. Thymol. The active constituent of the preceding. Presented by Merck & Company, of New York City.
1588. Thymene. Another constituent extracted from thyme leaves. Same donor.
1589. Salvia or sage.—The leaves of *Salvia officinalis* L. Native of Europe and everywhere cultivated.
1590. The same, ground.

THE POTATO FAMILY (*Solanaceae*)

1591. Small Japanese capsicum, cayenne pepper, or red pepper.—The fruit of *Capsicum minimum* Roxb. Native of tropical America and widely cultivated. From Japan. A form of rather low strength.
1592. The same, ground.
1593. Large Japanese capsicum.—A larger-fruited variety of the same.
1594. Mombassa capsicum or chillies.—The same, grown in eastern Africa and of great strength. Presented by H. H. Rusby.
1595. Phrik Duey Kai. Another variety of the same, grown in Siam.
1596. Chee Ta.—A chinese variety of paprika, chilli, or red pepper. the fruits of *C. sinensis* Jacq. (?). Native of tropical regions and cultivated. From Siam.
1597. Another sample of the same.
1598. Bombay cherry pepper.—The fruit of a cultivated variety of *C. frutescens* L. Native of tropical regions and cultivated. From Bombay, British India.
1599. Mexican paprika.—The dried fruit of *C. longum* DC. grown and prepared in Mexico. Native of tropical regions and cultivated. The best variety of paprika.
1600. Hungarian paprika. The preceding species, grown in Hungary.
1601. The preceding in a ground state.
1602. Spanish paprika.—The fruit of a variety of *C. annuum* L. Native of tropical America and everywhere cultivated. Grown in Spain.
1603. The preceding in a ground state.

THE THISTLE FAMILY (*Carduaceae*)

1604. Vanilla leaf.—The leaves of *Trilisia odoratissima* (Walt.) Cass. (See number 1447). From Sumpter County, Georgia. Collected by R. M. Harper, September 9, 1900.
1605. Another specimen of the same. Collected on the Pedee River, North Carolina, and presented by John Leman, April, 1910.
1606. Para cress. Spilanthes.—The herbage of *Spilantkes oleracea* L. Native of South America and cultivated in tropical countries. Presented by Merck & Company, of New York.

WAXES

Vegetable waxes are plant constituents somewhat resembling fats or oils in their nature and occurring as exuda-

tions on the surface of epidermis. It is a thin coating of wax that imparts the peculiar bluish appearance of "bloom" observed on the surface of grapes, plums, pumpkins, and some other fruits, as well as on the surfaces of many leaves. These waxes are collected by immersing the parts on which they occur in hot water which melts them. The wax then comes to the surface and is skimmed off, becoming solid on cooling.

1607. Carnauba palm leaves.—The leaves of *Copernicia cerifera* (Arruda) Mart. (*Palmae*—Palm Family). Native of southeastern South America.

1608. Carnauba wax.—The wax removed from the preceding. This is an extremely hard wax, which has many important special uses, particularly in the making of phonograph records.

1609. A darker colored sample of the same.

1610. Southern bayberries.—The fruits of *Myrica cerifera* L. (*Myricaceae*—Bayberry Family). Native of the southeastern United States. These fruits are seen covered with wax, which is used for various purposes, especially for the making of candles. From Miami, Florida. Collected by J. K. Small, November, 1904.

1611. Bayberry plant.—The fruiting leafy branches of *Myrica carolinensis* Mill. (*Myricaceae*—Bayberry Family). Native of North America. Collected in the New York Botanical Garden by J. A. Shafer.

1612. Bayberry wax.—The wax removed from the fruits of the preceding plant by melting in hot water and straining. Presented by Mr. Baker, of Hyannis, Mass.

1613. Bayberry wax candles.—Candles made of the preceding. Same donor.

1614. Bayberry wax candles. The same. Made at Staten Island, New York, and presented by Miss H. Louise Britton, in 1905.

1615. Candelilla.—The stems of a species of *Euphorbia* (*Euphorbiaceae*—Spurge Family). Native of southwestern United States and Mexico. Specimen acquired at Colima, Mexico, January, 1910, by W. A. Murrill.

1616. Japanese wax.—A wax obtained from the fruit of *Rhus succedanea* L. (*Anacardiaceae*—Sumac Family). Native of Japan. Specimen from the New York drug market. Presented by H. H. Rusby.

1617. Ibota wax.—The wax of *Ligustrum Ibota* Sieb. (*Oleaceae*—Olive Family). Native of China and Japan. From the Field Museum of Natural History.

FIXED OILS AND FATS

Fixed oils are fatty substances existing in many plants, especially in their seeds. Those which are liquid at ordinary temperatures are known as oils. Those which are solid at ordinary temperatures are known as fats. They are natural compounds of glycerin with special fatty acids,

such compounds being known as glycerides. They are of the greatest and most extensive use to man as foods, for lubrication and illumination, and in the making of paints and soaps. They can be removed by dissolving in various substances, especially in ether, or by boiling or melting in hot water, from which they may then be skimmed off. A great many oils are extracted by pressure, the seeds containing the oil being pressed between plates, which may be heated or not, according to the circumstances.

Numbers 1618–1625 represent coconut oil. Extracted from the seed of *Cocos nucifera* L. (See No. 441.)

1618. Copra.—The dried kernel of the coconut, as prepared for export.
1619. Another sample of the same. From the Philippine Islands. Presented by E. B. Southwick.
1620. Coconut oil, No. 1. The oil, of first quality, expressed from the preceding.
1621. Shipment coconut oil. A rather poor grade of the same.
1622. Refined coconut oil. The crude oil purified by a process of refining.
1623. Another sample of the same. Presented by Merck & Company, of New York.
1624. Coconut oil cake.—The cake or pumice remaining after the oil has been expressed. Largely used as a cattle food.
1625. Coconut oil meal. The preceding, ground for use as cattle food.
1626. Suberin.—A fat-like substance extracted from cork.
1627. Hemp seed.—The fruit of a variety of *Cannabis sativa* L. (See No. 550.)
1628. Hemp seed oil.—The oil expressed from the preceding.
1629. Poppy seed. (See No. 1448.) From the New York drug market.
1630. Poppy seed oil. The oil expressed from the preceding.
1631. Rape seed. (See No. 1524.) From the New York drug market. Presented by H. H. Rusby.
1632. The oil expressed from the preceding.
1633. Rape-seed meal.—The ground cake or pumice remaining after the expression of the above oil, ready for use as cattle food.
1634. Black mustard. (See No. 1519.)
1635. White or yellow mustard. (See No. 1522.)
1636. Expressed or fixed oil of mustard.—The fixed oil expressed from the above seeds.
1637. Mustard dross.—The finely broken shells of white mustard, obtained as a by-product when the seeds are ground.
1638. Carolina olive. Buffalo-nut.—The fruit of *Pyrularia pubera* Michx. (*Santalaceae*—Sandalwood Family). Native of the southeastern United States. Collected in 1904, in the mountains of North Carolina, by A. M. Huger. The expressed oil is used as a substitute for olive oil.
1639. Sweet almonds.—The seed of *Amygdalus communis* L. (*Drupaceae*—Plum Family). Native of Persia and cultivated. From the New York market.

1640. Bitter almonds (See Number 1532). From the New York market.

1641. Oil of sweet almond.—Expressed or fixed oil of almonds. Obtained by expression from either the sweet or bitter almond. Presented by Fritzsche Bros., of New York City.

1642. Soy beans. The beans from which the following oil is extracted. Presented by H. H. Rusby.

1643. Soy-bean oil.—A fixed oil expressed from the seeds of *Soja Soja* (L.) (*Fabaceae*—Pea Family). Native of Asia and largely cultivated as a food. From the New York drug market. Presented by H. H. Rusby.

1644. Peanuts.—The seeds of *Arachis hypogaea* L. (See No. 4304.)

1645. Peanut oil.—A fixed oil expressed from peanuts.

1646. Peanut butter. The preceding, mixed with some of the ground peanuts.

1647. Ground peanut cake.—The cake remaining after the expression of the above oil, ground into meal for use as cattle food.

1648.[24] Flax seed.—The ripe seed of the flax plant.

1649. The same ground.

1650. Crude linseed oil. The crude oil as expressed from the preceding.

1651. Refined linseed oil. The oil purified by special processes.

1652. Boiled linseed oil. The preceding after having been boiled.

1653. Linseed oil cake. The cake or pumice remaining after the expression of the oil from the seed.

1654. Linseed oil meal. Made by grinding the preceding. Largely used as cattle food.

1655. Crab nuts. Carapa seeds.—The seeds of *Carapa guianensis* Aubl. (?) (*Meliaceae*—Mahogany Family). Native of northern South America. Collected by H. H. Rusby on the lower Orinoco River, Venezuela, in 1896.

1656. Castor-oil beans or seeds.—The ripe seeds of *Ricinus communis* L. (*Euphorbiaceae*—Spurge Family). Native of Asia and widely cultivated.

1657.[25] Castor oil seeds from Banna, Ilicos Norte.

1658. The same from Santa Cruz, Laguna.

1659. The same from Piddig, Ilicos Norte.

1660–1661. Philippine samples without data.

1662. Castor oil.—Fixed oil expressed from the preceding. Used medicinally. This oil is very interesting and important, since it does not congeal readily at low temperatures, and is therefore a most serviceable lubricating oil for aeroplanes.

1663. Croton seeds.—The seeds of *Croton Tiglium* L. (*Euphorbiaceae*—Spurge Family). Native of the East Indies.

1664. Croton oil. Oleum Tiglii. Oleum Crotonis. The fixed oil expressed from the preceding seeds.

[24]Numbers 1648–1655 represent linseed oil and were presented by the American Linseed Oil Company, of Chicago, Illinois. Linseed or flaxseed is the ripe seed of *Linum usitatissimum* L. (See No. 602.) There are two strains of the flax plant, one of which is of special value for fiber and the other for its seeds.

[25]Presented by H. J. Baker and Brother, of New York City.

Numbers 1657–1661 are samples of castor-oil seeds, grown in the Philippine Islands and presented by E. B. Southwick.

1665. Tawantana. Curcas seeds. Barbadoes nuts. Purging nuts. Pinones.—The seeds of *Curcas purgans* Adans. (Same family as preceding.) Native of tropical America and sometimes grown as a hedge-plant. From the Philippine Islands, through E. B. Southwick.
1666. Curcas oil. The fixed oil expressed from the preceding seeds.
1667. Aleurites. Candle-nuts.—The seeds of *Aleurites trisperma* Blanco (?). From the Philippine Islands through E. B. Southwick.
1668. Another specimen of the same or of a closely related species. From China. Presented by H. H. Rusby.
1669. A spurious substitute for the same from eastern Asia. Presented by H. H. Rusby. From the New York drug market.
1670. Chinese wood-oil seeds or candle nuts. Aleurites.—The seeds of *Aleurites moluccana* (L.) Willd. (Same family.) From Cottabato, Philippine Islands, through E. B. Southwick.
1671. Kami. Another sample of the same, from same source and donor.
1672. Another sample of the same. From Porto Rico, West Indies.
1673. Chinese wood oil. The fixed oil expressed from plants mentioned under numbers 1667–1670. From the New York drug market.
1674. Cashew nuts. (See No. 2713.)
1675. Cardol.—A fixed oil obtained from the shell of the preceding. Presented by Merck & Company, of New York City.

Cotton-seed Oil

Cotton-seed oil is expressed from the ripe seeds of various species of *Gossypium* (*Malvaceae*—Mallow Family), native of tropical regions and extensively cultivated. The seeds yield about 1/5 of their weight of oil. After the cotton has been removed as completely as practicable the seeds are crushed and the hulls removed. The kernels are then partly cooked, after which the oil is removed by pressure. The cake that remains is ground into cotton-seed meal, which is largely used as a cattle food. The finer grades of cotton oil are used as food, especially in cooking. A butter substitute is made from it. The poorer qualities are used for lubrication and soap-making and for other purposes.

1676.[25] Cotton seeds with the lint upon them.
1677. The same after the removal of the lint.
1678. Uncooked cotton-seed kernels.
1679. The same after cooking.

[26]Numbers 1676–1684 represent cotton-seed oil and were presented by the American Cotton Oil Company, of New York City.

1680. The shells removed from the seeds.
1681. Cotton-seed oil in its crude condition.
1682. The same refined. Presented by Colgate & Company, of New York.
1683. Cotton-seed oil cake. The cake or pumice remaining after the expression of the oil.
1684. Cotton-seed oil meal. The ground cake used as a cattle food.
1685. Tree-cotton seeds. Kapok seeds. (See No. 136.) The seeds of *Ceiba pentandra* (L.) Gaertn. From the Philippine Islands. Presented by E. B. Southwick.
1686. Cacao. Theobroma. Chocolate seeds.—The seeds from which the following oil is expressed. From the New York market. Presented by H. H. Rusby.
1687. Oleum Theobromatis or Cocoa-butter.—The fixed oil expressed from the chocolate seed, the seed of *Theobroma Cacao* L. (*Sterculiaceae*—Chocolate Family). Native of tropical America and largely cultivated. This oil is of peculiar value in the making of ointments, suppositories, and other preparations, for the reason that it melts quickly at the temperature of the human body. It gives the rich flavor to chocolate.
1688. Cocoa shells. Chocolate shells.—The shells of the preceding seeds.
1689. Cocoa-shell butter.—A fat or fixed oil expressed from the preceding. From the New York drug market. Presented by H. H. Rusby.
1690. The seeds of *Thea sinensis* L. (*Theaceae*—Tea Family). Native of Asia and cultivated. Used for the expression of a fixed oil. Presented by H. H. Rusby.
1691. Illipe nuts or seeds.—The seeds of a species of *Illipe*. (*Sapotaceae*—Sapota Family). Native of the East Indies. Presented by the Singapore Oil Mills, of Singapore.
1692. Another sample. From a related species. Same donor.
1693. The fat expressed from one of the preceding two. Same donor.
1694. Illipe oil cake.—The cake or pumice remaining after the expression of Illipe oil.
1695. Another sample of Illipe nuts. Presented by Gravenhorst & Company, of New York.
1696. Picture of an olive tree grown in Italy.—The olive tree is *Olea europaea* L. (*Oleaceae*—Olive Family). Native of Europe and cultivated in subtropical regions.
1697. Leafy branch with fruit of the olive tree.
1698. Olive oil, or sweet oil, foots.—The poorest quality of olive oil obtained by final heavy pressure with the aid of heat. Suitable only for soap-making and similar uses.
1699. Refined olive oil. A fine, purified form of olive oil. Suitable for table use.
1700. Benne seed. Teel seed.—The seed of *Sesamum indicum* L. (*Pedaliaceae*—Benne Family). Native of India and cultivated in tropical regions.
1701. Benne-seed oil. The oil expressed from the preceding.
1702. Sunflower seed.—The seed of *Helianthus annuus* L. (*Carduaceae*—Thistle Family). Native of North America and cultivated for its seeds, as well as for ornament. From the New York drug market.
1703. Sunflower-seed oil. The oil expressed from the preceding.

Soap and Soap Substitutes

Soap is a compound of an alkali with the acid of a fat or related substance. It is produced by boiling the fat with lye, which causes the fat-acid to separate from the glycerin with which it is combined in the fat. This new compound is soap, and the glycerin is set free. Many resins, being closely related chemically to fats, may be similarly employed, the products being known as resin-soaps.

Many plants contain the peculiar substance *saponin*, which foams with water, like soapsuds, and has strong cleansing powers, for which reason they are often employed as soap-substitutes. It is to be noted that saponin is an irritant poison, and that such substances must not be used carelessly nor too freely upon the skin.

1704.[27] Palm oil. A fixed oil expressed from the seeds of *Elaeis guineensis* Jacq. (*Palmae*—Palm Family). Native of western Africa.

1705. Cochin coconut oil.—(See No. 1620.) Produced in Cochin-China. Used in soap-making.

1706. Crude cotton-seed oil. (See No. 1681.) Used in soap-making.

1707. Caustic soda.—This is boiled with the fat for the production of the soap.

1708. Soda ash. Boiled with oil for the production of soap.

1709. The product of saponification.—The mixture resulting from boiling one of the above lyes with fat.

1710. Graining change.—This sample shows the soap separating from the glycerin after the boiling process.

1711. The finished soap after its separation from the glycerin.

1712. Treated lye.—The residue after the removal of the soap treated with lye, or the recovery of the glycerin and salt.

1713. Crude glycerin recovered by the preceding process.

1714. Dynamite glycerin.—A refined glycerin used in the manufacture of nitroglycerin or dynamite.

1715. Chemically pure glycerin.—Glycerin in its finally purified condition.

1716. Common rosin. Used in the manufacture of rosin soaps.

1717. Rosin change. The product produced by the boiling of lye with rosin.

1718. Samples of rosin soaps made by the preceding process.

1719. Tar or pix liquida. Used in the manufacture of tar soap.

1720. Oil of tar.—A volatile oil distilled from tar. Also used in soap-making.

1721. Tar soap. Samples of tar soaps.

1722. Fruta de Jaboncilla, or soapberries.—The fruits of *Sapindus divaricata* Willd. (*Sapindaceae*—Soapberry Family). Native of southeastern South America. The pericarp of this fruit contains a large quantity of saponin

[27]The specimens in this exhibit, numbers 1704–1721, were presented by Colgate & Company, of New York.

and forms good lather with water. It is largely used as a substitute for soap in washing, in tropical regions.

1723. Soap bark.—The inner bark of *Quillaia saponaria* Molino. (*Rosaceae*—Rose Family.) Native of southwestern South America. This bark also contains a large quantity of saponin.

1724. Levant soap root.—The root of *Gypsophila Struthium* L. (*Caryophyllaceae*—Pink Family). Native of the Mediterranean region and cultivated. Contains a large amount of saponin.

1725. Soap root.—The root of *Saponaria officinalis* L. Same family as the preceding. Native of Europe and largely naturalized in the United States. Same composition and use as the preceding.

1726. Mexican soap root, or amole.—The rhizome and root of a species of *Yucca*. (*Dracaenaceae*—Dracaena Family). Native of the southwestern United States and Mexico. Roots of many specimens of Yucca are used as soap substitutes.

1726.1. California soap root.—The bulb of *Chlorogalum pomeridium* (Ker.) Kunth. (*Liliaceae*—Lily family). Native of southern California. Used like the preceding. Presented by Chas. F. Saunders, of Pasadena, California.

1727. Pokeroot.—The root of *Phytolacca americana* L. (*Phytolaccaceae*—Pokeberry Family). Native of America and a widely distributed weed. Used like soap in tropical America. Collected at Newark, New Jersey, by H. H. Rusby.

1727.1. California soap root.—The root of *Chenopodium californicum* S. Watson. (*Chenopodiaceae*—Goosefoot Family). Native of California and used as a soap substitute. Presented by Chas F. Saunders, Pasadena, California.

1728. Saponin.—The constituent of the preceding soap substitutes, which gives them their properties. Presented by Merck & Company, of New York.

VOLATILE OILS AND PERFUMERY

Volatile oils are for the most part mixtures of volatile substances which can be removed from plants or plant parts by a process of distillation. In this process the fresh or dried plant is mixed with water in the still, in order to prevent burning or other chemical decomposition. Heat is applied, whereupon the volatile oil is driven out of the plant tissue and enters the water. The water is capable of taking up only a small part of the volatile oil, the remainder of the latter, as it is driven out of the plant tissues, passing off through a tube, in the form of vapor. This tube is surrounded by cold water, which condenses the vapor of the oil, the latter then running off into a receptacle placed to receive it. The volatile oil may then be subjected to various processes to separate it into its several portions,

one or more of which contains its valuable properties. In a few cases, as that of lemon-peel, the oil is removed by expression. Volatile oils have many uses in medicine and the arts, being largely used in perfumery and in flavoring.

A perfume consists of an agreeably fragrant volatile substance, so held by another substance, the *menstruum*, that when exposed to the atmosphere, it will evaporate, with or without the menstruum, and come into contact with the olfactory nerves, with the result of producing a pleasant smell, or of concealing a disagreeable one. These aromatic substances are usually only slightly soluble in water. Nevertheless, many aromatic waters, such as lavender and orange-flower water, are used as perfumes. More frequently, they are held in alcohol, bay rum being an illustration of this class.

Sometimes the perfume is made by mixing the menstruum with the article in which the fragrant substance naturally exists, such as roses or orange flowers, and distilling by the application of heat, the fragrant substance thus being driven out of the flowers and entering the menstruum. In other cases, the fragrant substance, having previously been distilled from the flowers, is merely mixed with the menstruum. A fat, such as lard, is often made to take up the fragrant principle by placing the flowers or other articles between thin layers of the fat and allowing them to remain until their oil has permeated the latter, the resulting substance being known as a pomade.

Unless otherwise stated, the crude substances of this series were donated by J. L. Hopkins & Co., of New York, and the volatile oils by Fritzsche Brothers, of Leipsic and New York.

1729. Male fern.—The rhizome of *Dryopteris Filix-mas* (L.) Schott. (*Polypodiaceae*—Polypody Family). Native of the north temperate zone.

1730. Oil of male fern.—A volatile oil distilled from the preceding.

THE PINE FAMILY (*Pinaceae*)

1731. Scotch pine.—The leafy twigs of *Pinus sylvestris* L. Native of northern Europe. Collected from a cultivated tree in the New York Botanical Garden, by J. A. Shafer.
1732. Oil of Scotch pine.—Distilled from the preceding.
1733. Oil of *Pinus Pumilio*.—Distilled from the leafy twigs of *Pinus Pumilio* Haenke. Native of central Europe, and the source of Hungarian turpentine.
1734. Another sample of the same. Presented by the American Perfumery Association.
1735. The leafy twigs of this tree.
1736. Spruce twigs.—The leafy twigs of *Picea canadensis* (Mill.) B. S. P. Native of northern North America. Collected in the New York Botanical Garden by J. A. Shafer, February, 1904.
1737. Oil of American spruce. From the preceding and also from *P. mariana* (Mill.) B. S. P., of the same region.
1738. Oil of amber. Oleum Succini. (See No. 1227.)
1739. Silver fir.—The leafy twigs of *Abies Picea* (L.) Mill. Native of Europe and cultivated. Collected from a cultivated tree in the New York Botanical Garden.
1740. Oil of silver fir.—Distilled from the preceding.
1741. Another sample of the same. Presented by the American Perfumery Association.
1742. Oil of Siberian fir or "pine." Distilled from *A. sibirica* Ledeb. Native of northern Asia and cultivated.
1743. Another sample of the same. Presented by the American Perfumery Association.
1744. Hemlock leaves.—The leaves of *Tsuga canadensis* (L.) Carr. Native of eastern North America and cultivated. Collected in the New York Botanical Garden in March, 1904, by J. A. Shafer.
1745. Oil of hemlock. Distilled from the preceding.
1746. Arbor vitae.—The leafy twigs of *Thuja occidentalis* L. Native of northern North America and cultivated. Collected in the New Yrok Botanical Garden in August, 1918, by P. Wilson.
1747. Oil of arbor vitae. Distilled from the preceding.
1748. Cypress twigs.—The twigs of *Chamaecyparis thyoides* (L.) B. S. P. Same family. Native of eastern North America. Presented by the American Perfumery Association.
1749. Oil of cypress. Distilled from the preceding. Same donor.
1750. Another sample of the same.
1751. Sabina or savin.—The leafy twigs of *Juniperus Sabina* L. Native of the north temperate zone. Collected at Carnot, Pennsylvania, by J. A. Shafer, January 1, 1904.
1752. Oil of savin. Distilled from the preceding species.
1753. American cedar.—The leafy twigs of *Juniperus virginiana* L. Native of eastern North America. Collected in the New York Botanical Garden, in 1918, by P. Wilson.
1754. Oil of American cedar. Distilled from the preceding.

1755. Red-cedar wood.—The wood of the preceding species. Collected at the New York Botanical Garden.
1756. Oil of red-cedar wood. Distilled from the preceding.
1757. Juniperus. Juniper berries.—The fruits of *Juniperus communis* L. Native of the north temperate zone. From the New York drug market. Presented by H. H. Rusby.
1758. Oil of juniper. Oleum Juniperi. Distilled from the preceding fruits.
1759. Oil of juniper wood. Probably from the wood of the preceding species.
1760. Oil of cade. Oleum Cadini. Juniper wood-tar oil.—An empyreumatic, volatile oil obtained by the destructive distillation of the wood of *Juniperus Oxycedrus* L. Native of Europe and cultivated.

1760.1. Capii pororo.—The rhizome of *Kyllinga odorata* Vahl. (*Cyperaceae*—Sedge Family). Native of tropical America. Used in perfumery. From Paraguay, through the Field Museum of Natural History.

THE GRASS FAMILY (*Gramineae*)

1761. Lemon grass.—The leaves of *Andropogon citratus* D.C. Native of Europe and Asia, and cultivated. Collected by J. A. Shafer, in Montserrat, West Indies, February, 1907.
1762. Another sample of the same.
1763. Oil of lemon grass.—A volatile oil distilled from the preceding species.
1764. Another sample of the same. Presented by the American Perfumery Association.
1765. Citronella oil.—Distilled from the leaves of *Andropogon nardus* L. Native of India.
1766. Another sample of the same. Presented by the American Perfumery Association.
1767. The same, from Java. Same donor.
1768. Citronellol. An active constituent from the preceding. Same donor.
1769. Citronellal. An aldehyde from the same. Same donor.
1770. Vetiver, Vetivert, or Kuskus.—The roots of *Andropogon squarrosus* L. Native of India and widely cultivated.
1771. Oil of Vetiver or Kuskus. Distilled from the preceding.
1772. Ginger grass.—The roots of *Andropogon Calamus* Royle. Native of central India and cultivated.
1773. Another sample of the same.
1774. Oil of ginger grass. A volatile oil distilled from the preceding.
1775. Another sample of the same. Presented by the American Perfumery Association.
1776. Oil of palma rosa. Indian geranium oil.—Distilled from the leaves of *Andropogon schoenanthus* L. Native of India and cultivated.

1777. Calamus.—The rhizome of *Acorus Calamus* L. (*Araceae*—Arum Family). Native of the north temperate zone. Collected in the New York Botanical Garden.
1778. Oil of calamus. Distilled from the preceding.
1779. Lily-of-the-Valley. Convallaria.—The inflorescence of *Convallaria majalis* L. (*Convallariaceae*—Lily-of-the-Valley Family). Native of Europe

and of the southern Alleghanies, and cultivated for ornament and for perfumery. Grown by H. H. Rusby at Newark, New Jersey.

1780. Lily-of-the-Valley oil. A volatile oil distilled from the preceding.

1781. Madonna lily. White lily.—The flowers of *Lilium candidum* L. (*Liliaceae*—Lily Family). Native of southern Europe and cultivated, for ornament and for perfumery. Grown by H. H. Rusby, at Newark, New Jersey, 1919.

1782. White-lily oil. Distilled from the preceding.

1783. Hyacinth flowers.—The inflorescence of *Hyacinthus orientalis* L. (Same family). Native of the Mediterranean region and cultivated for ornament and for perfumery. Grown by H. H. Rusby at Newark, New Jersey, 1919.

1784. Oil of hyacinth.—Distilled from the preceding.

1785. Florentine orris root.—The prepared and specially cured rootstock of *Iris florentina* L. (*Iridaceae*—Iris Family). Native of southern Europe and cultivated. In its original state, this rootstock has none of the fragrance for which the drug is specially valued. It is soaked, peeled, and put through a process of sweating and fermentation by which the odorous principle is developed. From the New York drug market. Presented by H. H. Rusby.

1786. Orris oil or orris butter.—The odorous principle distilled from the preceding.

1787. Ceylon cardamom seeds. (See No. 1497.)

1788. Ceylon cardamom oil. Distilled from the preceding.

1789. Galangal or galanga.—The rootstock of *Alpinia officinarum* Hance. (*Zingiberaceae*—Ginger Family). Native of China and cultivated.

1790. Oil of galangal. Distilled from the preceding.

1791. Oil of Costus root. Distilled from the root of a species of *Costus*. (Same family.)

1792. Ginger. (See No. 1396.)

1793. Oil of ginger. Distilled from the preceding. This is the constituent of ginger to which its odor and flavor are due, but not its pungency.

1794. Gingerol.—Obtained from ginger. The principle to which the pungency of ginger is chiefly due.

1795. Cubeba or cubeb. The unripe fruit of *Cubeba Cubeba* (L.f.) Lyons. (*Piperaceae*—Pepper Family). Native of the East Indies and cultivated.

1796. Oil of cubeb. Distilled from the preceding.

1797. Black pepper. Piper nigrum. (See No. 1448.) From the New York drug market.

1798. Oil of black pepper. Distilled from the preceding. This is the constituent of pepper to which its odor and flavor are due, but not its pungency.

1799. Matico.—The leaves of *Piper angustifolium* R. & P. Same family. Native of Bolivia. Collected by M. Bang near Coroico, Bolivia. Presented by H. H. Rusby.

1800. Oil of matico. Distilled from the preceding.

1801. Oil of betel. Distilled from the leaves of *Piper Betel* L. Same family. Native of East Indies and cultivated.

1801.1. Anemopsis oil. A volatile oil extracted from *Houttnynia californica* B. & H. (*Piperaceae*—Pepper Family.) Native of California and the adjacent region, and cultivated. Presented by H. H. Rusby.

1802. Sweet-birch bark.—The bark of *Betula lenta* L. (*Betulaceae*—Birch Family). Native of eastern North America. Collected at Carnot, Pennsylvania, by J. A. Shafer, March, 1904.

1803. Oil of birch.—Distilled from the preceding. Also called oil of wintergreen and sold for it, with which it is identical in properties, and almost identical in composition.

1804. Birch buds.—The buds of *Betula lenta* L., or sweet birch. Presented by the American Perfumery Association.

1805. Oil of birch buds. Distilled from the preceding. Same donor.

1806. Methyl salicylate. Artificial oil of birch. Same donor.

1807. Methyl benzoate. Another compound of methyl. Same donor.

1808. Bayberry leaves. Wax-myrtle leaves.—The leaves of *Myrica carolinensis* Mill. Native of eastern North America. Collected at Nutley, New Jersey, July 3, 1919, by H. H. Rusby.

1809. Sweet-fern leaves. The leaves of *Comptonia peregrina* (L.) Coulter. (Same family.) Native of eastern North America.

1810. Hops, Lupulus, or Humulus.—The fruits of *Humulus Lupulus* L. (*Moraceae*—Mulberry Family). Native of Europe and Asia and cultivated in temperate and subtropical regions. From the New York drug market. Presented by H. H. Rusby.

1811. Oil of hops. Distilled from the preceding.

1812. Sandal-wood. White sandal-wood.—The heart-wood of *Santalum album* L. (*Santalaceae*—Sandal-wood family). Native of the East Indies and cultivated. Presented by Sharp and Dohme, of Baltimore, Maryland.

1813. Oil of sandal-wood. Oleum Santali. Distilled from the preceding. Same donor.

1814. Another sample of the same.

1815. Santalol.—The active constituent of oil of sandal-wood. Presented by the American Perfumery Association.

1816. West Indian spurious sandal-wood.—The wood of *Amyris balsamifera* L. (*Rutaceae*—Rue family). Native of the West Indies and northeastern South America. From the New York drug market. Presented by H. H. Rusby.

1817. Another sample of the preceding. Presented by C. H. Pearson, of New York City.

1818. Another sample. Presented by H. H. Rusby.

1819. West Indian oil of sandal-wood.—A spurious variety, distilled from the wood of *Ximenia americana* L. (*Olacaceae*—Olax Family). Native of the West Indies.

1820. Wild ginger, or Canada snakeroot.—The rootstock and roots of *Asarum canadense* L. (*Aristolochiaceae*—Snakeroot Family). Native of eastern North America. Collected by P. Wilson. (See Herb.)

1821. Oil of wild ginger. Distilled from the preceding.

1822. American wormseed herb. Chenopodium herb.—The herbage of *Chenopodium anthelminticum* L. (*Chenopodiaceae*—Goosefoot Family). Native of Europe and naturalized in the United States. Presented by Merck & Company, of New York.

1823. American wormseed. The fruits of the preceding.

1824. Oil of American wormseed. Oleum Chenopodii. Distilled from the preceding two species.

1824.1. Water-lily.—The flower of *Castalia odorata* (Dryand.) Woodv. & Mood. (*Nymphaeaceae*—Water-lily family). Native of eastern North America. Collected by W. A. Couper on Pompton Lake, New Jersey, July, 1920.

1825. Black caraway seed. Nigella seed. The seed of *Nigella sativa* L. (*Ranunculaceae*—Buttercup Family). Native of southern Europe and cultivated.

1826. Oil of black caraway or Nigella. Distilled from the preceding.

1827. Illicium or star anise.—The fruit of *Illicium verum* Hooker f. (*Magnoliaceae*—Magnolia Family). Native of China.

1828. Oil of star anise or Illicium. Distilled from the preceding.

1829. Anethol. The active principle of the preceding oil.

1830. Mace. (See No. 1478.)

1831. Oil of mace. Oleum Macis. Distilled from the preceding.

1832. Nutmegs. (See No. 1476.) Presented by Boustead & Company, of Singapore.

1833. Oil of nutmeg. Distilled from the preceding.

THE LAUREL FAMILY (*Lauraceae*)

1834. Ceylon cinnamon. (See No. 1497.)

1835. Oil of Ceylon cinnamon. Distilled from the preceding, although it is usually obtained from the chips, twigs, and other waste portions, rather than from the fine quill bark.

1836. Cinnamic aldehyde. The active constituent of oil of cinnamon. Presented by the American Perfumery Association.

1837. Cassia or cassia cinnamon. (See No. 1499.)

1838. Oil of cassia or cassia cinnamon. Distilled from the preceding.

1839. Model of a camphor tub, illustrating how crude camphor is imported. Presented by H. J. Baker & Brothers, of New York City.

1840. Another sample of same. Same donor.

1841. Crude camphor.—The crude, condensed distillate from the wood of *Cinnamomum Camphora* (L.) Nees & Eberm. Native of eastern Asia. Presented by H. J. Baker & Brothers, of New York City.

1842. Oil of camphor. Obtained as a by-product in the distillation of camphor.

1843. Pichury nuts.—The seeds of *Nectandra Pichury-major* Nees. Native of Brazil. From the New York drug market. Presented by H. H. Rusby.

1844. California wild olive. The fruiting branches of *Umbellularia californica* (Arnott) Nuttall. Native of California. Collected by H. H. Rusby near San Francisco, California.

1845. Laurel leaves or bay-laurel leaves. (See No. 1512.) Presented by H. H. Rusby.

1846. Oil of laurel or bay laurel. Distilled from the preceding.

1847. Sassafras roots. The roots of *Sassafras Sassafras* (L.) Karst. (See No. 1514.) Collected by H. H. Rusby.

1848. Oil of Sassafras. Distilled from the preceding.

1849. Safrol. The active constituent of oil of Sassafras. Presented by the American Perfumery Association.

1850. Kuri-Moji oil. Distilled from the root of *Benzoin sericeum* Sieb. & Zucc. Native of eastern Asia.

1851. Horse-radish. (See No. 1526.) Collected at Bronxdale, New York, by W. N. Clute.
1852. Oil of horse-radish. Distilled from the preceding.
1853. Black, red, or brown mustard. (See No. 1578.) Presented by H. H. Rusby.
1854. Volatile oil of mustard. Distilled from the preceding after it has been macerated in water. This oil is very poisonous and is not to be mistaken for the expressed or fixed oil of the same seed.
1855. Cochlearia, or scurvy grass. The herbage of *Cochlearia officinalis* L. (Same family.) Native of far northern regions. Presented by H. H. Rusby. .
1856. Oil of Cochlearia. An oil distilled from the preceding.
1857. Storax, or liquid styrax. The balsamic exudation of *Liquidambar orientalis* Mill. (*Hamamelidaceae*—Witch-hazel Family.) Native of Syria.
1858. Oil of storax. Distilled from the preceding.
1859. Cherry-laurel leaves. (See No 5424.)
1860. Oil of cherry laurel.Distilled from the preceding, after maceration in water.
1861. Cherry-laurel fruits. The fruits of the same tree.
1862. Bitter almonds. (See No. 1532.)
1863. Oil of bitter almonds. Distilled from the preceding after maceration.
1864. Benzaldehyde. Artificial oil of bitter almonds.
1865. Oil of rose. Attar of rose. Distilled from the fresh flowers of *Rosa damascena* Mill. (*Rosaceae*—Rose Family). Native of Persia and cultivated.
1866. Another sample of the same. Presented by the American Perfumery Association.
1867. Oil of Rhodium.
1868. Crab-apple flowers. A flowering branch of *Malus coronaria* (L.) Mill. (*Malaceae*—Apple Family). Native of the eastern United States. Collected by R. S. Williams in the New York Botanical Garden, May 25, 1919.
1869. Balsam of Tolu.—A balsam obtained from *Toluifera Balsamum* L. (*Papilionaceae*—Bean Family). Native of northern South America. Presented by Parke, Davis & Company, of Detroit, Michigan.
1870. Oil of Tolu balsam. Distilled from the preceding.
1871. Balsam of Peru.—A balsam exuding from the wounded bark of *Toluifera Pereirae* (Royle) Baillon. (Same family.) Native of Central America. Presented by the American Perfumery Association.
1872. Oil of Peru balsam. Distilled from the preceding.
1873. Benzyl benzoate.—A constituent of balsam of Peru and other balsams. Presented by the American Perfumery Association.
1874. Benzyl acetate. A compound of benzyl, from balsam of Peru and other balsams. Same donor.
1875. Cumarin. (See No. 1545 et seq.) Same donor.
1876. Copaiba, or balsam of Copaiba.—An oleo-resin obtained from cavities in the trunk of various South American species of *Copaiba*. (Same family.)
1877. Oil of Copaiba. Distilled from the preceding.

1878. Rose geranium.—The herbage of *Pelargonium capitatum* (L.) Ait. (*Geraniaceae*—Geranium Family). Native of south Africa and cultivated.
1879. French oil of rose geranium. Distilled from the preceding. Produced in France.
1880. Spanish oil of rose geranium. Distilled from the preceding. Produced in Spain.
1881. Reunion oil of rose geranium. The same, produced on Reunion Island.
1882. Algerian oil of rose geranium. The same, produced in Algeria.
1883. African oil of rose geranium. Presented by the American Perfumery Association.
1884. Geraniol.—The active constituent of rose-geranium oil. Same donor.
1885. Guaiac wood. (See No. 1239.)
1886. Oil of Guaiac wood. Distilled from the preceding.
1887. Concrete oil of Guaiac. Distilled from Guaiac wood. Presented by the American Perfumery Association.

THE RUE FAMILY (*Rutaceae*)

1888. Small Jaborandi leaves.—The leaflets of *Pilocarpus microphyllus* Stapf. Native of Brazil. Presented by H. H. Rusby.
1889. Oil of Jaborandi leaves. Distilled from one or more species of *Pilocarpus*.
1890. Orange flowers.—A flowering branch of the bitter orange. (See No. 1556.) Collected in the conservatory of the New York Botanical Garden.
1891. Oil of Neroli, or oil of orange flowers. Distilled from the preceding.
1892. Oil of Niaouli. Presented by the American Perfumery Association.
1892.1. Bergamot fruit.—The fruit of *Citrus Bergamia* Risso & Poit. Native of southern Europe and cultivated. Presented by Lanman & Kemp, of New York City.
1893. Oil of bergamot. Oleum Bergamottae. Obtained from the rind of the preceding.
1894. Limes. Lime fruits.—The fruit of *Citrus Lima* Lunan. Native of Asia and cultivated. Collected in Porto Rico by P. Wilson.
1895. Oil of limes. Obtained from the rind of the preceding.
1896. Sweet oranges. From the New York drug market. Presented by H. H. Rusby.
1897. Bitter orange peel. The rind of bitter orange. (See No. 1556.)
1898. Mandarins, or Tangerines. Chinese orange.—The fruit of *Citrus nobilis* Lour. Native of China and cultivated. From the New York market. Presented by H. H. Rusby.
1899. Oil of Mandarin or Tangerine. Obtained from the rind of the preceding.
1900. Another sample of the same. Presented by the American Perfumery Association.
1901. Lemons.—The fruit of *Citrus Limonum* (L.) Risso. Native of the East Indies and cultivated. Collected in the conservatory of the New York Botanical Garden.
1902. Oil of lemon. Expressed from the rind of the preceding.
1903. Citral.—An active constituent of oil of lemon and some other oils. Presented by the American Perfumery Association.

1904. Orange berries. Petit Grain. Aurantia Immatura.—The unripe fruits of number 1897. Presented by Lehn & Fink, of New York City.
1905. Oil of orange berries or Petit grain.
1906. Short buchu leaves.—The leaves of *Barosma betulina* (Thunb.) Bart. & Wendt. Native of southern Africa. Presented by H. H. Rusby.
1907. Oil of buchu. Distilled from one or more species of *Barosma*.
1908. Ruta or rue. The herbage of *Ruta graveolens* L. Native of Europe and Asia and cultivated. Presented by H. H. Rusby.
1909. Oil of rue. Oleum Rutae. Distilled from the preceding.
1910. Prickly-ash bark (southern).—The bark of *Zanthoxylum Clava-Herculis* L. Native of the southern United States.
1911. Oil of prickly ash. Distilled from the preceding or from *Z. americanum* Mill., a native of north-eastern North America.
1912. Cusparia, or Angostura, bark.—The bark of *Cusparia Angostura* (Rich.) Lyons. Native of northern South America.
1913. Oil of Cusparia or Angostura. Distilled from the preceding.

THE MYRRH FAMILY (*Burseraceae*)

1914. Olibanum. (See No. 1240.)
1915. Oil of Olibanum. Distilled from the preceding.
1916. Myrrh.—A gum-resin exuding from incisions in the bark of *Commiphora Myrrha* (Nees) Engler. Native of northeastern Africa.
1917. Oil of myrrh. Distilled from the preceding.
1918. Elemi. (See No. 1241.) Presented by Seabury & Johnson, of New York City.
1919. Oil of Elemi. Distilled from the preceding.
1920. Cayenne red. Linaloe wood.—The wood of *Bursera aloexylon* Engler. (*Burseraceae*—Myrrh Family.) Native of tropical America. Presented by the American Perfumery Association.
1921. Oil of Linaloe wood. Distilled from the preceding. Same donor.

1922. Cascarilla.—The bark of *Croton Eleuteria* (L.) Bennett (*Euphorbiaceae*—Spurge Family). Native of the Bahama Islands.
1923. Oil of Cascarilla. Distilled from the preceding.
1924. Mastic, or mastiche. (See No. 1252.)
1925. Oil of mastic. Distilled from the preceding.
1926. Ambrette seeds.—The seeds of *Hibiscus Abelmoschus* L. (*Malvaceae*—Mallow Family.) Native of tropical Asia and Africa. Presented by the American Perfumery Association.
1927. Oil of Ambrette seeds. Distilled from the preceding. Same donor.
1928. Borneo camphor, or Borneol. A camphor originally obtained from cavities in the wood of *Dryobalanops aromatica* Gaertn. (*Dipterocarpaceae*—Dipterocarpus Family). Native of the East Indies. This substance also occurs in the volatile oils of many other plants, especially those of the *Carduaceae* or Thistle family. Same donor.
1929. Bornyl acetate.—A compound of a derivative principle from Borneo camphor. Same donor.

THE MYRTLE FAMILY (*Myrtaceae*)

1930. Eucalyptus citriodora.—The leaves of *Eucalyptus citriodora* Hooker. Donated by E. A. Schaefer, of New York City.
1931. Oil of *Eucalyptus citriodora*. Distilled from the preceding.
1932. Eucalyptus leaves. The leaves of *Eucalyptus Globulus* Labill. Native of Australia.
1933. Oil of *Eucalyptus Globulus*. Distilled from the preceding.
1934. Another sample of the same. Presented by the American Perfumery Association.
1935. Eucalyptol. Cineol. The active constituent of the above oil.
1936. Another sample of the same.
1937. Cloves. Caryophyllus. (See number 1561.)
1938. Oil of cloves. Oleum Caryophylli. Distilled from the preceding.
1939. Eugenol. The active constituent of oil of cloves and some other oils of the myrtle family. Presented by the American Perfumery Association.
1940. Allspice. Pimenta. (See No. 1558.)
1941. Oil of allspice. Oleum Pimentae. Distilled from the preceding.
1942. Bay leaves. Myrcia leaves. The leaves of *Amomis caryophyllata* (Jacq.) Krug. & Urb. Native of tropical America and cultivated. Presented by Hugo Brussell & Company, of New York City.
1943. Oil of bay. Oleum myrciae. Distilled from the preceding. The source of bay rum.
1944. Oil of cajuput. Distilled from the leaves of *Cajuputi viridiflora* (Gaertn.) Lyons. Native of the East Indies and cultivated.
1945. Another sample of the same. Presented by the American Perfumery Association.
1946. Myrtle leaves. The leaves of *Myrtus communis* L. Native of western Asia and cultivated. Collected in the conservatory of the New York Botanical Garden.
1947. Oil of myrtle. Distilled from the preceding.

1948. Virginia, or American, sarsaparilla.—The rootstock of *Aralia nudicaulis* L. (*Araliaceae*—Ginseng Family). Native of eastern North America. Collected by H. H. Rusby at upper Montclair, New Jersey. (See Herb.)
1949. Sesquiterpene of *Aralia nudicaulis*. The active constituent of the oil distilled from the preceding.

THE CARROT FAMILY (*Ammiaceae*)

1950. Coriander. (See No. 1570.)
1951. Oil of coriander. Oleum Coriandri. Distilled from the preceding.
1952. Galbanum.—The gum-resin from the root of *Ferula galbaniflua* Boiss. & Buhse. Native of western Asia.
1953. Oil of galbanum. Distilled from the preceding.
1954. Fennel. Foeniculum.—The fruit of *Foeniculum Foeniculum* (L.) Karst. Native of Europe and Asia and cultivated.
1955. Oil of fennel. Oleum Foeniculi. Distilled from the preceding.
1956. Another sample of the same. Presented by the American Perfumery Association.

1956.1. Fennel chaff. The chaffy and other waste portions of the preceding. Presented by H. H. Rusby.

1957. Oil of fennel chaff. Distilled from the chaffy and other waste portions of fennel.

1958. Lovage. Levisticum.—The roots of *Levisticum Levisticum* (L.) Karst. Native of southern Europe and cultivated.

1959. Oil of lovage. Oleum Levistici. Distilled from the preceding.

1960. Cumin. Cuminum. Cummin.—The fruit of *Cuminum Cyminum* L. Native of northern Africa and cultivated.

1961. Oil of cumin. Oleum cymini. Distilled from the preceding.

1962. Anise. Anisum. (See No. 1573.)

1963. Oil of anise. Oleum Anisi. Distilled from the preceding.

1964. Anethol. The active constituent of the preceding. Presented by the American Perfumery Association.

1965. Anisic aldehyde. The aldehyde of anisic acid, a constituent of anise. Same donor.

1966. Caraway. Carum. (See No. 1576.)

1967. Oil of caraway. Oleum Carvi. Distilled from the preceding.

1968. Carvacrol. The active constituent of the preceding.

1969. Carvon. An active constituent of oil of caraway. Presented by the American Perfumery Association.

1970. Carvene. Another constituent of the same oil. Same donor.

1971. American Angelica.—The root of *Angelica atropurpurea* L. Native of northeastern North America.

1972. Oil of American Angelica. Distilled from the preceding.

1973. European Angelica. The rhizome and root of *Angelica Archangelica* L. Native of northern Europe and cultivated.

1974. Oil of European Angelica. Distilled from the preceding.

1975. Opopanax.—A gum-resin obtained from *Opopanax Opopanax* (L.) Lyons. Native of southern Europe.

1976. Oil of Opopanax. Distilled from the preceding.

1977. Another sample of the same. Presented by the American Perfumery Association.

1978. Sumbul. Musk-root.—The root of *Ferula Sumbul* Hooker f. Native of western Asia.

1979. Oil of sumbul. Distilled from the preceding.

1980. Indian dill or Anethum.—The fruit of the Indian variety of *Anethum graveolens* L. Native of Asia and cultivated.

1981. Oil of dill. Oleum Anethi. Distilled from the preceding.

1982. Celery.—The leaves of *Celeri graveolens* (L.) Britton. (See No. 1577.) From the New York market. Presented by H. H. Rusby.

1983. Oil of celery leaves. Distilled from the preceding.

1984. Celery fruit or "seed." The fruit of the preceding species.

1985. Oil of celery fruit or "seed." Distilled from the preceding.

1986. Parsley fruit or "seed." (See No. 1578.)

1987. Oil of parsley fruit or "seed." Distilled from the preceding.

1988. Asafoetida.—A gum-resin obtained from incisions in the living root of *Ferula fetida* (Bunge) Regel, and other species of *Ferula*. Native of western Asia.

1989. Oil of asafoetida. Distilled from the preceding.

1990. Wintergreen. Gaultheria.—The leaves of *Gaultheria procumbens* L. (*Ericaceae*—Heath Family). Native of eastern North America. Collected by J. A. Shafer.

1991. Oil of wintergreen. Oleum Gaultheriae. Distilled from the preceding.

1992. Synthetic oil of wintergreen. Methyl salicylate. An artificial substitute for the preceding, manufactured from carbolic acid.

1993. Marsh tea. Labrador tea. Ledum.—The leaves of *Ledum groenlandicum* Oeder. (Same family.) Native of the northern hemisphere. Collected by C. B. Robinson.

1994. Oil of marsh tea. Distilled from the preceding.

1995. Lilac flowers.—The flowers of *Syringa vulgaris* L. (*Oleaceae*—Olive Family). Native of Europe and cultivated. Collected in the New York Botanical Garden.

1996. Oil of Syringa or lilac flowers. Distilled from the preceding.

1997. Oil of lilac flowers (Muguet). Distilled from a species of *Syringa*.

1998. White lilac flowers. A variety of *S. vulgaris* grown by H. H. Rusby at Newark, New Jersey.

1999. Oil of jasmine. Distilled from the flowers of a species of *Jasminum*. (Same family.) Native of the East Indies and cultivated.

2000. Heliotrope flowers.—The flowers of *Heliotropium peruvianum* L. (*Boraginaceae*—Borage Family). Native of western South America and everywhere cultivated as a garden flower.

2001. Heliotropin. An active constituent of the oil distilled from the preceding. Presented by the American Perfumery Association.

THE MINT FAMILY (*Labiatae*)

2002. Patchouli leaves.—The leaves of *Pogostemon Heyneanum* Benth. Native of the East Indies and cultivated. From the New York drug market. Presented by H. H. Rusby.

2003. Oil of patchouli. Distilled from the preceding.

2004. Another sample of the same. Presented by the American Perfumery Association.

2005. Hyssop.—The leaves of *Hyssopus officinalis* L. Native of southern Europe and cultivated.

2006. Oil of hyssop. Oleum Hyssopi. Distilled from the preceding.

2007. Melissa. Sweet Melissa or balm. Lemon balm.—The leaves of *Melissa officinalis* L. Native of Europe and Asia and cultivated.

2008. Oil of balm. Oleum Melissae. Distilled from the preceding.

2009. Lavender flowers.—The flowers of *Lavandula angustifolia* (L.) Mill. Native of southern Europe and cultivated. Presented by the American Perfumery Association.

2010. Oil of lavender flowers. Distilled from the preceding.

2011. Linaloöl. The active constituent of the preceding. Same donor.

2012. Linaloyl acetate. A compound of the active constituent of No. 2010. Same donor.

2013. Another sample of oil of lavender.

2014. Spike lavender.—The flowers and herbage of *Lavandula spica* L. Native of the Mediterranean region and cultivated.
2015. Oil of spike. Distilled from the preceding.
2016. Another sample of the same. Presented by the American Perfumery Association.
2017. Origanum flowers. Cretan dittany flowers. Spanish hops.—The inflorescence of *Orignaum creticum* Sieber. (*Labiatae*—Mint Family). Native of southern Europe and cultivated. Same donor.
2018. Oil of Origanum. Distilled from the preceding. Same donor.
2019. Marjoram. Majorana. (See No. 1579.)
2920. Oil of marjoram. Distilled from the preceding.
2021. Rosemary. Rosmarinus.—The leaves of *Rosmarinus officinalis* L. Native of southern Europe and cultivated.
2022. Oil of rosemary. Oleum Rosmarini. Distilled from the preceding.
2023. Sage. Salvia. (See No. 1589.)
2024. Oil of sage. Oleum Salviae. Distilled from the preceding.
2025. Sclarea. Muscatel sage.—The herbage of *Salvia Sclarea* L. Native of Europe and cultivated.
2026. Muscatel sage oil. Distilled from the preceding.
2027. Spearmint. *Mentha spicata.* (See No. 1584.)
2028. Oil of spearmint. Oleum Menthae spicatae. Distilled from the preceding.
2029. Peppermint. *Mentha piperita.* (See No. 1583.)
2030. Oil of peppermint. Oleum Menthae piperitae. Distilled from the preceding.
2031. Purified menthol. The active constituent of oil of peppermint. Presented by the American Perfumery Association.
2032. Pennyroyal. *Mentha Pulegium.*—The herbage of *Mentha Pulegium* L. Native of Europe and cultivated. Collected by J. A. Shafer.
2033. Oil of pennyroyal. Oleum Pulegii. Distilled from the preceding.
2034. American pennyroyal. Hedeoma.—The herbage of *Hedeoma pulegioides* (L.) Pers. Native of northeastern North America.
2035. Oil of American pennyroyal. Oleum Hedeomae. Distilled from the preceding.
2036. Garden thyme. Thymus. (See No. 1585.)
2037. Brown oil of thyme. The crude oil distilled from the preceding.
2038. White oil of thyme. Oleum Thymi. The same, refined.
2039. Summer savory. Satureia. (See No.1581.)
2040. Oil of summer savory. Oleum Satureiae. Distilled from the preceding.
2041. Sweet basil. Basilicum.—The leaves of *Ocimum Basilicum* L. Native of Asia and Africa and cultivated.
2042. Oil of sweet basil. Oleum Basilici. Distilled from the preceding.
2043. Valerian. Valeriana. The rootstock and roots of *Valeriana officinalis* L. Native of northern Europe and Asia and cultivated.
2044. Oil of valerian. Oleum Valerianae. Distilled from the preceding.

THE THISTLE FAMILY (*Carduaceae*)

2045. Levant wormseed. Santonica.—The unexpanded flower heads of *Artemisia pauciflora* (Weber) Ledeb. Native of Turkestan. Presented by Parke, Davis & Company, of Detroit.

2046. Oil of Levant wormseed. Oleum Santonicae. Distilled from the preceding.
2047. Estragon. Tarragon.—The leaves of *Artemisia Dracunculus* L. Native of southern Europe and Asia and cultivated.
2048. Oil of estragon or tarragon. Oleum Dracunculi. Distilled from the preceding.
2049. Elecampane. Inula.—The root of *Inula Helenium* L. Native of Europe and Asia. Largely naturalized in the United States. Presented by the American Perfumery Association.
2050. Oil of elecampane. Oleum Inulae. Distilled from the preceding. Same donor.
2051. Another sample of the same.
2052. Roman, or English, chamomile. Anthemis.—The flower-heads of cultivated plants of *Anthemis nobilis* L. Native of Europe and cultivated in all temperate regions.
2053. Oil of Roman, or English, chamomile. Oleum Anthemi. Distilled from the preceding.
2054. Arnica root.—The rootstock and root of *Arnica montana* L. Native of Europe and Asia.
2055. Oil of Arnica root. Distilled from the preceding.
2056. Arnica flowers. The flower heads of the preceding species.
2057. Oil of Arnica flowers. Distilled from the preceding.
2058. Erigeron. Fleabane. Coltstail. Horsetail. Prideweed.—The herbage of *Leptilon canadense* (L.) Britton. Native of North America and naturalized throughout almost the whole world. Collected by J. A. Shafer.
2059. Oil of fleabane. Oleum Erigeronitis. Distilled from the preceding.
2060. Yarrow. Milfoil.—The herbage of *Achillea Millefolium* L. Native of the northern hemisphere. Collected by J. A. Shafer.
2061. Oil of yarrow. Oleum Achilleae. Distilled from the preceding.
2062. Tansy. Tanacetum.—The herbage of *Tanacetum vulgare* L. Native of Europe and Asia and widely naturalized in the United States. Collected by J. A. Shafer.
2063. Oil of tansy. Oleum Tanaceti. Distilled from the preceding.
2064. Iva. Marsh elder.—The herbage of *Iva frutescens* L. Native of the eastern United States.
2065. Oil of Iva. Oleum Ivae. Distilled from the preceding.

Fumitories and Masticatories

Fumitories

Fumitories are substances used for smoking, tobacco being one of the most important.

Tobacco

Tobacco is the commercial dried and cured leaves of *Nicotiana Tabacum* L. and of some other species of *Nicotiana*. The great bulk of commercial tobacco comes from

the first-named species. The plant pertains to the *Solanaceae*, or Potato Family. It is a native of tropical America and is now largely cultivated in all except cold countries. In its original condition, or when quickly dried in the sun, it does not possess the peculiar odor for which commercial tobaccos are valued. In order to develop these principles, the tobacco is put through a series of processes which cause fermentation and the odorous principles are developed. These fermentations are due to the activity of various bacteria which propagate in the leaf. The bacteria differ in identity in different countries, and the important differences in the tobaccos produced in different countries are supposed to be chiefly due to the differences of these bacteria. Tobacco is smoked partly for its peculiar odorous and flavoring principles and partly for the effects of the alkaloid nicotine, to which it chiefly owes its narcotic and poisonous properties. As a rule, there is more nicotine present in proportion as the climate is hotter and the growth more luxuriant.

2066–2085.[28] Typical samples of twenty varieties of commercial tobacco. This sample case was exhibited at the Crystal Palace Exposition in 1851.

2086–2088. North Carolina tobacco of the crop of 1898.

2089–2091. Wisconsin tobacco of the crop of 1898.

2092–2094. New York tobacco of the crop of 1898.

2095–2097. Connecticut tobacco of the crop of 1898.

2098–2102. Canadian tobacco of the crop of 1904. Presented by G. Stauvel.

2103. Pennsylvania tobacco of the crop of 1898.

2104–2107. Kentucky tobacco of the crop of 1898.

2108. Mexican tobacco.—From Tepic, Mexico, through the Field Museum of Natural History.

2109. The same, from Oaxaca, Mexico. Same donor.

2110. The same, from the City of Mexico. Same donor.

2111. The same, from Chiapas, Mexico. Same donor.

2111.1. Mexican cigarettes.—Obtained by J. N. Rose, in Mexico.

2112. Siam tobacco. Produced in Siam, where it was obtained by Percy Wilson, of the Garden Staff.

2113. Latlaw tobacco.—A prepared tobacco of Siam. Same source.

2114. Petchaburee.—A form of tobacco prepared in Siam. Same source.

2115. Kanchonburee.—Another form of the same. Same source.

[28] Unless otherwise specified, the samples in this exhibit were presented by the American Tobacco Company, of New York City.

2116. Java smoking tobacco.—Grown and prepared in Java. Same source.

2117. Chumpan tobacco.—Another form of prepared tobacco from Siam. Same source.

2118. Bolivian tobacco.—Produced and prepared in the Yungas Valley, Bolivia. Purchased in the market of La Paz by R. S. Williams, in 1902.

2119. Manila family cigars.—These large cigars are hung in the Manila houses to serve as a supply of smoking tobacco for the members of the family. Acquired in Manila by R. S. Williams, in 1905.

2120. Jamaica rope smoking tobacco.—A peculiar form of tobacco prepared in Jamaica. Acquired by L. M. Underwood in March, 1903.

2121. Guadeloupe tobacco. Produced on the island of Guadeloupe. Presented by F. E. Lloyd, in June, 1903.

2122. Cuban cigars in native package of banana leaves.—From Matanzas, Cuba. Presented by Anna Myers, New York City.

2123. Venezuela plug tobacco.—As manufactured and sold in the markets of Venezuela. From the Field Museum of Natural History.

2124. A variety of tobacco, probably produced from *Nicotiana rustica* L. From the United States Treasury Department. Native of and cultivated in oriental countries as a source of tobacco.

2125. A Persian variety of tobacco.—Probably the product of the same species.

2126. Turkish tobacco.—Also probably derived from *N. rustica*. Presented by H. H. Rusby.

2127. Tobacco stems.—The petioles and midribs of tobacco leaves, removed in preparing tobacco for smoking and chewing. These stems contain a considerable quantity of nicotine and are very valuable for the making of an extract used as an insecticide, and for other purposes.

2128. Tobacco extract. An extract prepared from the preceding and used as an insecticide.

2129. Snuff.—Consisting of the finely powdered leaves of tobacco with or without the addition of other substances to modify its odor and effect. In previous generations it was very largely used in the nose to produce a stimulating effect somewhat similar to that produced by smoking.

2130. Pituri leaves.—The leaves of *Duboisia Hopwoodii* F. v. Muller. (*Solanaceae*—Potato family.) Native of Australia and cultivated. These leaves are used by the Australian natives for smoking, as tobacco is used in other countries. They do not contain nicotine, but the somewhat similar alkaloid *piturine*, and are powerfully poisonous, much in the same way as tobacco.

2131. Indian tobacco. *Lobelia inflata*.—The herbage of *Lobelia inflata* L. (*Lobeliaceae*—Lobelia Family). Native of eastern North America. This drug contains the alkaloid lobeline, which is in many respects similar to nicotine in its action on the system. The plant was smoked like tobacco by the North American Indians.

2132. Cascarilla bark.—The bark of *Croton Eluteria* (L.) Sw. (*Euphorbiaceae*—Spurge Family). Native of the Bahama Islands. This bark contains no alkaloid, but bitter and aromatic constituents, on account of which it is frequently mixed with tobacco to modify its flavor.

2133. Kinnikinnick.—The bark of *Cornus Amomum* Mill. (*Cornaceae*—Dogwood Family). Native of eastern North America. This bark contains no

alkaloid, but is bitter and aromatic and is used for smoking by the North American Indians, usually mixed with tobacco or Lobelia.

2134. Smoking opium.—This is opium (See No. 2572) specially prepared for use in smoking, chiefly by the Chinese. For this purpose the crude opium is broken up into small pieces and boiled in water, the impurities and inferior portions being skimmed off the top. It is then evaporated to the consistency of thick molasses, in which form it is sold for use. A little pellet of this is gathered on the end of a tiny spoon, and is partially dried in the flame of a lamp. It is thus prepared for introduction into the pipe.

Masticatories

Masticatories are substances chewed by human beings otherwise than as foods. No very perfect explanation has ever been offered for the very general desire among human beings of all races to employ these substances. In some cases this is done in order to obtain the effects upon the nervous system of certain powerful constituents which are contained in the masticatories. This is true in the case of tobacco, containing nicotine, coca leaves containing cocaine, betel nuts containing arecoline, and cola nuts containing caffeine. In other cases, as in ordinary chewing-gum, the masticatories contain no such active principle. Sometimes they possess pleasing flavors which may to a certain extent explain their use. In other cases there appears to be no pronounced flavor and it must be assumed that the only possible nervous effect is a reflex one resulting from the mechanical movements made in chewing.

2135–2138 represent chewing tobaccos. As a rule, such tobacco, especially that in plug form, contains various flavoring matters which have been added to increase its palatability.

2135. Ordinary loose chewing tobacco.—This consists of the leaves of ordinary tobacco, cut up into fine shreds suitable for chewing.

2136. Ordinary plug chewing tobacco.—Almost all plug tobaccos are mixed with flavoring substances, such as licorice or molasses.

2137. Navy plug chewing tobacco. A form of plug tobacco which is very popular among sailors.

2138. Vanilla leaves. (See No. 1604).—These leaves contain the odorous principle cumarin, having a strong and agreeable odor similar to that of Vanilla, whence it derives its name. It has a number of important uses in perfuming and flavoring, and is used very largely as an addition to tobacco, both for smoking and chewing.

2139. Bolivian Coca leaves.—The leaves of *Erythroxylon Coca* Lam. (*Erythroxy-*

laceae—Coca Family). Native of the Andean region of South America and so long cultivated that it is no longer known in the wild state, except as an escape from cultivation. Grown in Bolivia. Presented by R. S. Williams. The habit of chewing these leaves is universal among the natives of the tableland and high mountain regions of the Andes. They contain the very powerful and highly poisonous alkaloid cocaine, as well as other alkaloids in small amounts. Cocaine has the power of deadening the sense of feeling in the parts to which it is applied, on which account it is largely used to prepare for minor surgical operations of a painful character. It also has a powerful stimulating effect upon the nerve centers, in many respects like that of the caffeine contained in tea and coffee. One of its effects is that of powerfully stimulating the breathing processes. This is a very important effect in high regions, where the air is so rarified as to cause difficulty in securing the necessary amount of oxygen. It is because of this effect that the leaves are so extensively used in those regions. Every Indian carries a little bag filled with these leaves. Several times a day he resorts to their use, seating himself upon the ground and resting during the chewing period. It is the usual practice to mix with the leaves a small amount of ashes, called *llipta*, made preferably by burning the leaves and stems of particular plants. It is probable that the salty nature of these ashes tends to heighten the flavor of the leaves while chewing. It is also probable that the alkaline nature of the ash tends to more perfectly free the alkaloid and heighten the nervous effects of chewing the leaves.

2140. Truxillo Coca leaves.—The leaves of *Erythroxylon truxillense* Rusby. Native of Peru and largely cultivated. From the New York drug market.

2141. Betel nuts, or Areca nuts.—The seed of *Areca Catechu* L. (*Palmae*—Palm Family). Native of the East Indies and cultivated. These leaves are generally chewed by the East Indian natives, mostly before being dried and preferably when still unripe. They contain a number of alkaloids, the principal one, arecoline, being a very powerful stimulant of the nervous system.

2142. Betel leaves.—The leaves of *Chavica Betel* (L.) Miq. (*Piperaceae*—Pepper Family). Native of the East Indies and cultivated. These leaves possess a pungent or aromatic property and are usually chewed with the betel nut partly for their flavor, and partly because they impart a blood-red color to the saliva and give a permanent brownish tint to the teeth.

2143. Cola nuts.—The cotyledons of the seeds of several species of *Cola* (*Sterculiaceae*—Chocolate Family). Native of tropical Africa and cultivated. These seeds contain much caffeine and it is probably chiefly for the stimulating effect of this substance that they are chewed. They are mostly used in the fresh state, and after undergoing the primary stage of germination, which changes part of their starch into sugar, thus imparting to them an agreeable sweetish taste.

2144. Fresh cola nuts. The preceding seeds in an undried condition.

2145–2154 illustrate gum chicle, the chief basis of American chewing-gum. It is the inspissated milky juice of *Sapota Achras* Mill. (*Sapotaceae*—Sapota Family). Native of tropical American and cultivated in all tropical regions for its edible fruit, the sapodilla. Unless otherwise specified,

these specimens were presented by the American Chicle Company, of New York.

2145. Chicle gum in the crude state in which it is imported.

2146. Another sample of the same.

2147. An original package of the same as imported from Mexico. Presented by the India Rubber World.

2148. Refined chicle gum. The preceding after having been boiled and strained to remove its impurities.

2149. Prepared chicle gum. The preceding, sweetened and flavored in preparation for pressing into commercial forms for chewing.

2150. Commercial chewing-gum as sold for use.

2151. Another sample of crude chicle presented by R. L. Johnston, of New York City.

2152. The preceding, boiled and purified. Same donor.

2153. Spruce gum. The oleo-resin exuded by *Picea mariana*. (See No. 798). This is the original American chewing-gum. Collected by H. H. Rusby at Marlboro, New Hampshire, September, 1919.

2154. Pine balls.—The oleo-resin exuded by *Pinus caribaea* Morelet. Native of the West Indies.

2155. Chew-stick.—The stem of *Gouania lupuloides domingensis* (*Rhamnaceae*—Buckthorn Family). Native of the West Indies. The stem is largely chewed by the natives.

Beverages, Including Chocolate

Beverages are liquids drunk to allay the sensation of thirst, without regard to any nourishment that they may contain. Such a substance as milk is therefore both a food and a beverage, while water is purely a beverage. The sensation of thirst is a demand from the entire system for water. A number of beverages of vegetable origin consist of pure or almost pure water, and are devoid of taste and nourishing properties.

Numbers 2156–2158 represent aqueous beverages of vegetable origin.

2156. Traveler's palm.—This is the leaf-base of *Ravenala madagascariensis* J. F. Gmel. (*Musaceae*—Banana Family). Native of the tropics of the Old World and cultivated. The base of the leaf-stem of this plant is hollow and becomes filled with water, which remains stored until a dry season, when it is required for use. Travelers, when in need of water, readily obtain it by tapping one of these hollow leaf-stems.

2157. Bamboo joint.—Many species of bamboos possess the habit of storing up water in their hollow stems for use when needed, and this may be obtained by the traveler in the same way as from the preceding.

2158. Young coconuts. (See No. 441).—Coconuts in the young condition consist merely of a shell filled with liquid. This liquid has a slightly acidulous

and sweetish flavor and also contains considerable nourishment. Taken from the fresh nut, it is usually somewhat cool, even though the surrounding temperature may be elevated. It constitutes a delicious and refreshing beverage, and in some localities, where at times there is no fresh water supply, it furnishes the only means of obtaining drinking water.

2158.1. Banana syrup.—The juice of the banana preserved with syrups. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2159. Lemons. (See No. 1901.) Well known for their use in making lemonade.

2160. Lemon syrup.—The juice of the preceding, preserved with sugar. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2161. Limes.—The ripe fruit of *Citrus Lima*. (See No. 1894.)

2162. Lime syrup. The juice expressed from the pulp of the preceding, and preserved with sugar. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2162.1. Orange syrup.—The juice of the orange, *Citrus Aurantium*, preserved with sugar. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2162.2. Red orange syrup.—The juice of the fruit of the blood orange similarly preserved. Same donor.

2162.3. Golden orange syrup.—Another form of preserved orange juice. Same donor.

2163. Citric acid. Acidum citricum.—An acid existing in many fruits and usually extracted from lemon or lime juice. Presented by Merck & Company, of New York.

2164. Swizzle sticks.—Sticks employed in tropical countries, especially in the West Indies, for stirring lemonade and other beverages.

2165. Pineapple.—The ripe fruit of *Ananas Ananas* (L.) Lyons. (*Bromeliaceae*—Pineapple Family). Native of and cultivated in tropical countries. From the New York market. Presented by H. H. Rusby.

2166. Pineapple syrup.—The unfermented juice expressed from the preceding, and preserved with sugar. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2167. Gooseberries.—The ripe fruit of various species and cultivated varieties of *Grossularia* (*Grossulariaceae*—Gooseberry Family). Native of the north temperate zone and some mountain regions in the tropics. From the New York market.

2168. Gooseberry syrup. The unfermented juice expressed from the preceding and preserved with sugar. Presented by the J. Hungerford Smith Company of Rochester, New York.

2169. Raspberries.—The ripe fruit of several species and cultivated varieties of *Rubus* (*Rosaceae*—Rose Family).

2170. Raspberry syrup.—The unfermented juice expressed from the preceding and preserved with sugar. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2171. Strawberries.—The ripe fruits of various species and cultivated varieties of *Fragaria*. (Same family). Native of nearly all regions with a temperate climate. From the New York market.

2172. Strawberry juice. The unfermented juice expressed from the preceding.

2172.1. Strawberry syrup.—The preceding, preserved with sugar. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2173. Grapes.—The ripe fruit of various species of *Vitis* (*Vitaceae*—Grape Family).

2174. Grape juice.—The unfermented juice expressed from the preceding.

2174.1. Grape syrup. The preceding preserved with sugar. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2175. Apples. The fruit of *Malus Malus* (L.) Britton. (*Malaceae*—Apple Family.) Native of Europe and cultivated in many varieties in all temperate regions.

2176. Apple juice. The unfermented juice expressed from apples.

2177–2181. Ginger ale and the substances used in its manufacture. Alcohol is either entirely wanting or present in only minute amount. They were presented by the Gosman Ginger Ale Company, of Baltimore, Maryland.

2177. African ginger. Ginger produced in Africa. (See No. 1396.)

2177.1. Ground African ginger.

2178. Jamaica ginger. Ginger produced and prepared in Jamaica.

2178.1. Ground Jamaica ginger.

2179. Ginger ale. A sparkling or carbonated beverage flavored with ginger and lemon juice, and sweetened.

2179.1. Ginger syrup. A syrup prepared from ginger and used for flavoring. Presented by the J. Hungerford Smith Company, of Rochester, New York.

2180. Cayenne pepper or Capsicum. (See No. 1591). Sometimes substituted for ginger in making ginger ale. From the New York market.

2181. The same in the ground state.

Tea, or Thea

Ordinary tea consists of the dried leaves of *Thea sinensis* L. (*Theaceae*—Tea Family). Native of China and cultivated in warm countries, especially in China and Ceylon. The plant is a much-branched shrub, bearing handsome, creamy-white flowers in the axils of its deep-green leaves. For most varieties of tea, the leaves are picked when fully mature and dried, usually being rolled into little cylinders before drying. If dried quickly, over the fire, green tea results; but when allowed to wilt and undergo a slight fermentation in heaps, being then slowly dried, the result is black tea. Tea contains much tannic acid and from 1.5 to 4 per cent. of caffeine ("theine"), on which latter depends its stimulating properties, and its tendency to produce disorders of the nervous system when used in excess.

2182. Picture of a tea plant. Presented by Mrs. N. L. Britton.

2183. Picture of the gathering of tea leaves. Same donor.

2184. Coarse tea.—Consisting of large, entire leaves. Presented by Smith, Baker & Co., of New York.
2185. Fine tea.—Consisting of small, broken leaves. Same donor.
2186. Choicest Formosa Oolong tea. Oolong tea of first quality, produced in the island of Formosa. Same donor.
Numbers 2187–2194 are samples of choice black teas presented by Percy L. Johnson, of New York City.
2187. Another sample of choice Formosa tea.
2187.1. Russian caravan tea. The choicest and rarest of teas; very rarely seen in the New York market.
2188. Java tea.
2189. India tea.
2190. Ceylon tea.
2191. English breakfast tea.
2192–2194 are samples of choice green teas from the same donor.
2192. Gunpowder tea.
2193. Japan tea.
2194. Young Hyson.
2195. Baled tea.—Selected large leaves, dried and packed with great care, for use by the Chinese. Presented by F. H. Leggett & Company, of New York.
2196. A fancy-packed, fine Chinese tea, in oriental boxes. Presented by W. F. Gaynor, of New York.
2197. Tea tablets.—Tea pressed into tablets, each sufficient for one cup of tea.
2198. Tea flowers.—The dried flowers of the tea plant. Presented by Smith, Baker & Company, of New York.
2199. Tea dust.—Tea reduced to the condition of a powder. Same donor.
2200. Tea stems.—Fragments of the twigs on which the leaves are borne. They are used for the extraction of their contained caffeine. Same donor.
2201. Theine or caffeine.—An alkaloid existing in tea, coffee, and some other plants.

Maté, or Paraguay Tea

Numbers 2202–2208 represent Paraguay tea, or Maté used as a beverage by the people of Paraguay and neighboring countries, as tea is used in other lands. It consists of the dried leaves of *Ilex paraguariensis* St. Hil. (*Ilicaceae* —Holly Family), a native tree of the region named, and largely cultivated there. Its mature leaves are dried and coarsely powdered and are then ready for making an infusion for drinking. These leaves contain less than one per cent. of caffeine. The taste for this beverage is an acquired one, but it is generally stated that after the taste is acquired, its subjects prefer maté to either tea or coffee.

2202. Maté, or Paraguay tea leaves. The crude leaves.
2203. The same, coarsely broken.

2204. The same, finely broken.
2205. The same powdered.
2206. Another sample of the leaves, more finely powdered.
2207. The maté prepared for use by a special process.
2208. Implements used in preparing and drinking the beverage maté.
2209. Indian black draught. Cassena.—The leaves of *Ilex vomitoria* Ait. (Same family as last). Native of the southeastern United States. These leaves contain a fraction of one per cent. of caffeine and were largely used by the aborigines in a beverage that produced the stimulating effects of tea and coffee.
2210. Guarana.—A dried paste consisting chiefly of the kernels of the seeds of *Paullinia Cupana* Kunth. (*Sapindaceae*—Soap-berry Family), native and cultivated in tropical South America,—roasted, crushed, and moulded into forms. These seeds contain a larger percentage of caffeine, or guaranine, than any other known substance, and guarana is a stimulating beverage like tea and coffee, but far more powerful. The beverage is made either by infusion, like tea and coffee, or more often by stirring the powder in cold water. Like tea and coffee, it is a habit-forming drug and tends when used in excess to destroy the central nervous organization, producing palsy in various forms and degrees.
2211. New Jersey tea. Ceanothus.—The leaves of *Ceanothus americanus* L. (*Rhamnaceae*—Buckthorn Family). Native of eastern North America. It is said that the patriotic citizens of New Jersey used these leaves as a tea substitute during the Revolutionary embargo on tea. These leaves do not contain caffeine nor any principle having similar properties. Collected by H. H. Rusby at Upper Montclair, New Jersey.
2212. Another sample of the same. Same donor.

Coffee

Coffee is the roasted ripe seed of several species of *Coffea*, almost all *C. arabica* L. (*Rubiaceae*—Madder Family), native of the Orient and now cultivated in all tropical countries. The plant is a shrub, bearing an abundance of deep-green glossy leaves and in their axils clusters of large, white, handsome, and fragrant flowers. The flowers are succeeded by berry-like fruits, each containing two seeds. These seeds are freed from pulp and cleansed, after which a thin, tough covering, technically known as "parchment," is removed. They are then roasted so as to develop their aroma and flavor, and to render them brittle and easily ground, after which they are ground for use in the well-known way. Coffee varies greatly in its percentage of caffeine, from 1.5 to 3.5 per cent., and consequently in

strength. As a rule, the finest flavor is not associated with the higher percentages of caffeine. Coffee contains less caffeine than tea, and therefore, the strength of the infusion being the same, is less injurious to the nervous system. When used in excess, it induces a sort of palsy and also injures the kidneys. When large quantities are habitually used, it tends to impair the vision.

2213.[29] A fruiting branch of *Coffea arabica* L.
2214. Picture illustrating the picking of coffee.
2215. Entire coffee beans.
2216. Coffee in "parchment."—The coffee seeds before the removal of their thin, tough covering.
2217. Blue Mountain coffee.—A very choice product from the Blue Mountains of Jamaica, West Indies. Acquired in Jamaica by D. T. MacDougal.
2218. Ordinary Jamaica coffee.
2219. Washed Jamaica coffee. Jamaica coffee that has been thoroughly washed in water, in a tumbling barrel.
2220. Guatemala coffee.—Coffee of very fine quality, produced in the mountains of Guatemala. Presented by Claassen Bros., of New York City.
2221. Coban Maracajeipa Guatemala coffee.—A specially fine variety of Guatemala coffee. Presented by Percy H. Johnson, of New York City.
2222. Washed Guatemala coffee. Presented by Claassen Bros.
2223. Washed Manda coffee.—Exported from Maracaibo, Venezuela. Same donor.
2224. Ordinary Maracaibo coffee. Same donor.
2225. Caracas coffee.—A well-flavored coffee, but weak and its flavor fleeting. Presented by Percy H. Johnson, of New York City.
2226. Washed Cauca coffee. Produced in the valley of the Cauca River, Colombia, South America.
2227. Medellin coffee.—Exported from Medellin, Colombia. This coffee, of exquisite and permanent flavor and medium strength, is probably the choicest coffee in the American market. Presented by Percy H. Johnson, of New York City.
2227. 1. A sample of the same that has been kept for many years excluded from the air, developing a wonderful flavor. Same donor.
2228. Bucaramanga Coffee.—Coffee exported from Bucaramanga, Colombia. Same donor.
2229. Washed Costa Rica coffee. Presented by Claassen Bros.
2230. Another sample of the preceding.
2231. Washed Mexican coffee.
2232. Fancy Porto Rico coffee.
2233. Ordinary Porto Rico coffee.
2234. Black Jack coffee.—A rather poor grade of coffee, though of strong flavor, produced in the Rio Janiero section of Brazil.

[29]Unless otherwise specified, the samples were presented by Charles A. Wakeman, of New York City.

2235. Choice Gonaives coffee. Produced in Haïti, West Indies.
2236. Ordinary Haïti coffee.
2237. Santo Domingo coffee.
2238. Mocha coffee.—A coffee of very fine flavor but weak in caffeine, produced in Arabia.
2239. Siam coffee.
2240. Preanger coffee. Produced in Java.
2241. Washed Peaberry coffee. Produced in Costa Rica.
2242. Ankola coffee. A Sumatra coffee.
2243. Mandheling Java coffee. Produced in Sumatra.
2244. Interior coffee of Java.
2245. Ayerbangies coffee. An entire Java coffee.
2246. Private Estate Java coffee. Presented by Claassen Bros. In Java, all coffee is graded by number by the government, and stamped with its grade. That which is of too low a quality to be entitled to any number is called "Private Estate."
2247. Another sample of the same.
2248. Washed Java coffee. Produced in Sumatra.
2249. Sumatra coffee.
2250. Unpicked Palembang coffee. Coffee produced at Palembang, Sumatra, from which the inferior grains have not been picked out. Presented by Boustead & Company, of Singapore.
2251. Picked Palembang coffee. Same donor.
2252. Palembang black coffee. Same donor.
2253. Picked Java coffee.
2254. Kono coffee. Produced in the Sandwich Islands.
2255. Coffee from the Philippine Islands. Presented by E. B. Southwick.
2255.1. Coffee syrup. A syrup flavored with the extract of coffee. Presented by the J. Hungerford Smith Company, of Rochester, New York.
2256. Painted, or colored, coffee.—Coffee that has been subjected to a superficial coloration to improve its appearance.
2257. Liberian coffee.—A leafy and fruiting branch of the Liberian coffee tree *Coffea liberica* Hier. Obtained by H. H. Rusby at the Trinidad Botanical Gardens, West Indies.
2258. Another leafy fruiting branch of Liberian coffee.
2259. Liberian coffee. Presented by Boustead & Company, of Singapore.
2260. Java-grown Liberian coffee. Presented by Claassen Bros.
2261. Roasted coffee grains contrasted with the unroasted, to indicate the increase in size caused by roasting.
2262. Robusta coffee.—The seed of a species of coffee, native of Liberia, transplanted to Java and other countries. Nearly worthless and used to adulterate other coffee. Grown in Brazil. Presented by Percy H. Johnson, of New York City.
2263. Kaffee-Hag.—Coffee that has been caused to lose most of its caffeine by undergoing the incipient stage of germination. Presented by H. H. Rusby.
2264. Postum cereal. A coffee substitute made in Battle Creek, Michigan.
2265. Mogdad coffee.—The seeds of *Cassia occidentalis* L. (*Caesalpiniaceae*—Senna Family). Native of tropical and subtropical America, where it

is sparingly used as a coffee substitute. It contains no caffeine, but a narcotic principle that affects the nerves somewhat like caffeine.

2266. Another sample of the same. Presented by H. H. Rusby.

2267. Coffee-No. A coffee substitute said to consist of the germ of grain prepared and somewhat sweetened.

Chocolate

Chocolate is a hardened paste, composed of the ground kernels of the seeds of *Theobroma Cacao* L. (*Sterculiaceae*, Chocolate Family), native of tropical America and cultivated in all tropical regions. The cacao tree is about as large as an apple tree and of much the same form. Its fruits are of the size of small cantaloupes and of the same general form, though somewhat narrowed at the end. The shell is somewhat hard, like the rind of a squash. It is filled with a soft white pulp, out of which a good jelly is made. The seeds are embedded in this pulp and are about as large as almonds. They are removed and cleaned from the pulp and are then subjected to a sweating process, by various methods. A common method is to bury them in clay for a few days. They are then dried and are ready for the market under the name of cacao, or chocolate beans. In making chocolate, the seeds are roasted like coffee, and are then coarsely broken up. The shells are winnowed out and the broken kernels that remain are known as chocolate nibs. These nibs are then finely ground between millstones. The heat developed by the friction melts the fat of the kernels, so that a thick, molasses-like liquid is formed, which is allowed to drip into molds. On cooling, it hardens into a cake in the form of the mould. This cake then consists of plain or unsweetened chocolate. By regrinding it with the addition of sugar, sweet chocolate is produced. On pressing chocolate cakes between hot plates, a fat is squeezed out in melted form that is known as cocoa butter, or oleum theobromatis. For making the finest of chocolate, some of this fat is added to ordinary chocolate. The cake that remains after the removal of cocoa butter is ground to

make breakfast cocoa. It contains the alkaloid theobromine, closely related to caffeine, so that chocolate and cocoa possess some of the stimulating effects of coffee.

The specimens in this exhibit, unless otherwise specified, were presented by Huyler & Co.

2268. Picture of a chocolate plantation in Venezuela.
2269. Picture of a coffee branch bearing fruit.
2270. Picture of Hindoo laborers on a cocoa plantation in Venezuela.
2271. Picture of cocoa picking in Venezuela.
2272. Picture showing the drying of the seeds.
2273–2274. Fruits of the cocoa tree, containing their seeds.
Numbers 2275–2288 represent cocoa produced in various places.
2275. From Puerto Cabello, Venezuela.
2276. From Choroni.
2277. From Maracaibo, Venezuela.
2278. Another specimen from the same place.
2279. From Cauca, Colombia.
2280. From Chuao.
2281. From Avello.
2282. From Santa Rosa.
2283. From Africa.
2284. From Agua Clara.
2285. From Prado.
2286. From Surinam, Dutch Guiana.
2287. From Guayaquil, Ecuador.
2288. From Haïti.
2289. From Piddig, Ilicos Norte, Philippine Islands. Presented by E. B. Southwick.
2290. From Manila, Philippine Islands. Same donor.
2291. From Bacong, Negros, Philippine Islands. Same donor.
2292. From Cabayuga, Philippines. Same donor.
2293. Coarse chocolate nibs.—The coarsely broken kernels.
2294. Fine chocolate nibs.
2295. Chocolate "germs."—The plumules of the embryos. They resist grinding, so that it is necessary to remove them.
2296. Chocolate shells.—They contain a little fat and theobromine, and possess some value.
2297. A cake of plain chocolate.
2298. Cakes of unsweetened chocolate.
2299. The same sweetened and flavored with vanilla.
2300. Cocoa butter, or oleum theobromatis, expressed from chocolate.
2301. Cake cocoa. The cake after removal of the cocoa butter.
2302. The same ground into breakfast cocoa.
2303. Theobromine.—An alkaloid extracted from chocolate or from cocoa shells.
2304. Native-made, plain chocolate sticks. From Jamaica.
2305. The same from Trinidad, West Indies. Obtained by H. H. Rusby, in Port-of-Spain, in 1896.

2306. Pods of *Theobroma Simiarum* J. D. Smith. Collected in Colombia, by Charles Patin.
2307. Wild cacao. A species of *Theobroma* from Bogota, Panama. Presented by A. E. Heighway.

Wines

Wines are alcoholic beverages made by fermenting fruit juices. By this process, not more than 18 per cent. of alcohol can be caused to form, and only rarely does the amount exceed 16 per cent. In the process of fermenting, carbonic acid gas is produced. If the fermentation occurs in a closed receptacle, as a bottle, this gas is retained, charging the wine, which is then called *sparkling*. Such are champagne and sweet cider. If the gas is allowed to escape, dry wine is produced, such as claret or hard cider. Sweet wines are produced by the addition of sugar. These wines are sometimes flavored, as in angelica wine. Fortified wines, like port and sherry, are made by adding alcohol.

Unless otherwise stated, the articles in this exhibit were presented by H. T. Dewey & Son, of New York City.

Numbers 2308–2319 comprise a series of pictures illustrating wine-making at Egg Harbor, New Jersey.
2308. A vineyard.
2309. Rows of grape vines.
2310. Grapes on the vine.
2311. Pressing out the grape juice.
2312. Cellars where the juice is fermented.
2313. Exterior view of same.
2314. Passage-way in cellar between wine butts.
2315. Vaults containing sweet wine.
2316. Casks, each containing 160 gallons of wine.
2317. Fifteen casks containing 30,000 gallons of wine.
2318. Sixteen-hundred-gallon casks.
2319. Two-thousand-gallon casks.
2320. Concord grapes.—A black grape used in wine-making.
2321. Niagara grapes.—A white grape used in wine-making.
2322. Champagne.—A sparkling wine, made from various grapes.
2323. Ruby claret.—Made from Concord grapes.
2324. Ives seedling grapes.
2325. Claret made from the preceding.
2326. Norton's Virginia seedling grapes.
2327. Claret made from the preceding.
2328. Catawba grapes.

2329. Wine made from the preceding.
2330. Dry Moselle wine made from Catawba grapes.
2331. Delaware grapes.
2332. Sauterne wine made from the preceding.
2333. Franklin grapes.
2334. Burgundy wine made from the preceding.
2335. Angelica wine. Made from various grapes and flavored with angelica.
2336. Port wine. Made from various grapes.
2337. Sherry wine. Made from various grapes.
2338. Scuppernong grapes.
2339. Scuppernong wine. Made from the preceding.
2340. Dandelion flowers.—The flowers of the dandelion, *Leontodon Taraxacum* L. (*Cichoriaceae*—Chicory Family). Native of Europe and naturalized in the United States. Presented by George Kalb.
2341. Dandelion wine. Made from the preceding. Presented by George Kalb, in January, 1903.
2342. Red currants.—The fruit of *Ribes rubrum* L. (*Grossulariaceae*—Gooseberry Family). Native of Europe and cultivated.
2343. Red currant wine. Made from the preceding.
2344. Elderberries.—The fruit of *Sambucus canadensis* L. (*Caprifoliaceae*—Elderberry Family). Native of eastern North America.
2345. Elderberry wine. Made from the preceding.
2346. Apple champagne or sweet cider. A sparkling wine made from apple juice.
2347. Hard cider or apple wine. The preceding, from which the gas has escaped.
2348. Oranges. The fruit of *Citrus Aurantium*. (See No. 3733).
2349. Orange wine. Made from the preceding.

Malt Beverages

Malt beverages are made by converting the starch of grains into sugar, and then causing the latter to undergo alcoholic fermentation. This process is caused to take place in closed containers, so that the carbonic acid gas is retained and the liquids become sparkling. They contain from 3 to 9 per cent. of alcohol. Numbers 2350–2359 represent the grains used in the process. Presented by the American Malting Company, of New York.

2350. New York state barley.—The grain of *Hordeum distichum* L. (*Gramineae*—Grass Family). Native of Europe and everywhere cultivated for its grain.
2351. Malt made from the preceding.—For making malt, the barley is thoroughly soaked in water and then spread out and exposed to a warm temperature, which causes it to sprout, or germinate. At a certain stage, when most of the starch has been converted into sugar, the process is stopped by drying. The resulting product is malt.
2352. Montana barley.

2353. Dakota barley.
2354. Malt from Wisconsin barley.
2355. The same from western Wisconsin barley.
2356. Half-dried malt.
2357. Undried malt.
2358. Malt sprouts.—The young shoots produced by the seeds in germinating.
2359. Malt grains.—The malt after fermentation and the making of beer from it.

Numbers 2360–2371 represent various beverages made from the malt.

2360. Gold-label export beer.
2361. Imperial beer for export.
2362. Imperial German beer for export.
2363. Lager beer for export.
2364. Walkuren brand beer.
2365. Old Settlers brand.
2366. Siegfried Brau lager.
2367. Bohemian beer.
2368. Pale ale.
2369. India pale ale.
2370. Stout.
2371. Porter.

Distilled Liquors

2372. Rye.—The grain of *Secale cereale* L. (*Gramineae*—Grass Family). Native of Europe and cultivated. The source of rye whiskey.
2373. Rye whiskey.—The fermented grain is called a *mash*. By distilling this when it contains its maximum percentage of alcohol, whiskey is obtained. This variety is obtained from a mash of rye. It contains about 50 per cent. alcohol.
2374. Indian corn, or maize. (See No. 257).
2375. Bourbon whiskey. Distilled from a mash of Indian corn.
2376. Scotch whiskey.—Containing a small amount of creosote, originally derived from the fire employed in distilling, but now added artificially.
2377. Brandy.—By distilling wine, a beverage is obtained called brandy. It contains a little less alcohol than whiskey.
2378. Peaches.—The fruit of *Amygdalus Persica* L. (*Amygdalaceae*—Plum Family). Native of Persia and cultivated. The source of peach brandy.
2379. Peach brandy. Distilled from the preceding, after fermentation.
2380. Apple brandy or apple jack. Brandy distilled from apple wine.
2381. Juniper berries. (See No. 1757.)
2382. Gin. A liquor distilled from juniper berry mash.
2383. Sloes.—The fruit of *Prunus spinosa* L. (*Amygdalaceae*—Plum Family). Native of Europe and cultivated.
2384. Sloe gin.—An alcoholic beverage distilled from the preceding.
2385. Raw sugar.
2386. Rum.—Distilled from fermented sugar or from the fermented juice of the sugar-cane.
2387. Pulque.—The fermented juice of the century plant, *Agave americana* L. and other species of *Agave* (*Amaryllidaceae*—Amaryllis Family). Native of Mexico and cultivated.

2388. Mescal rum or brandy.—Distilled from the preceding.

2388.1. Manioca. Cassava. Yuca.—The root of *Manihot palmata* (Vell.) Muell. Arg. (*Euphorbiaceae*—Spurge Family). Native of tropical America and cultivated.

2388.2. Liquor de Manioca.—A liquor distilled from the preceding.

2389. David's root.—The root of *Chiococca alba* (L.) A. Hitchc. (*Rubiaceae*—Madder Family). Native of tropical America. Used by the West Indian natives in the preparation of a beverage. Acquired in Jamaica by J. A. Shafer.

2390. Mavi.—An undetermined bark used in Porto Rico in the preparation of a beverage. Acquired by L. M. Underwood.

2391. Caapi root and leafy branch.

2392. Caapi.—A non-alcoholic beverage prepared by soaking in water the root of *Banisteriopsis Caapi* (Spruce). (*Malpighiaceae*—Malpighia Family.) Nature of northwestern Brazil and cultivated. It produces a profound narcotic effect, with great and agreeable hallucinations. A slightly excessive dose may cause stupor and death.

2393. Kava. Kawa.—The rootstock and root of *Macropiper latifolium* (L.f.) Miq. (*Piperaceae*—Pepper Family). Native of Polynesia and cultivated. The source of a beverage much used in the Pacific Islands.

Proximate Principles or Plant Constituents

Proximate principles are substances of definite chemical composition existing naturally in the living body, such as sugar, starch, quinine and oxalic acid. It is in their proximate principles that the toxic, medicinal, nutritive and other physiological properties of plants reside. In many cases, these principles are extracted in the pure state, for human use. In others, the plant body, or part of it, contains the useful principle employed. In such cases, it is often desirable to know the percentage of proximate principle that the substance contains, the process of determining it being called *assaying*. Chemical analysis is in large part the determination of the proximate principles and their amounts. In the use of many medicines and some foods, the statutes require that when sold under their legally recognized title, they must contain not less than a named percentage of useful constituent. Such articles are called *standardized*, and their number is being steadily increased. The method is applicable to a very large portion of the products in common use and nothing else constitutes such

an important protection to the consumer against fraudulent practices and claims. Unless otherwise stated, the articles in this case were presented by Messrs. Merck & Company, of New York.

2394.[30] Chlorophyl ($C_{55}H_{72}O_5N_4Mg$).—The substance which chiefly gives the green color to foliage and is the active agent in directing the energy of the sun's rays in building up the compounds that are utilized by the plant.

2395. Starch ($C_6H_{10}O_5$).—The primary compound that is formed in most plants by the action of the chlorophyl. It is manufactured from the water absorbed by the roots of the plant (H_2O) and the carbon dioxide (CO_2) inhaled through the breathing pores of the epidermis.

2396. Glucose ($C_{12}H_{22}O_{11}$). Fruit sugar.—The form of sugar that occurs most commonly in the vegetable kingdom.

2397. Sugar ($C_{12}H_{22}O_{11}$). Cane sugar.—One of many forms of sugar that are formed by the plant out of its starch.

2398. Cellulose. The substance of which the cell wall is originally composed. As the cell continues to live, it usually covers the cellulose with other substances. The hairs of the cotton seed, after being freed from fat and some slight impurities, consist practically of pure cellulose.

2399. Lignin.—A substance found overlying the cellulose walls of wood cells. It gives hardness, strength, and durability to wood tissue.

2400. Cutin.—A substance found overlying the cellulose walls of epidermal cells. It is impervious to most substances and thus serves to protect the underlying tissues.

2401. Suberin.—A substance found overlying the cellulose walls of cork cells. It is even more impervious to liquids and gases than is cutin.

2402. Gum.—One of a number of similar substances that overlies the cellulose wall of some cells of certain plants.

2403. Spanish ergot.—The sclerotium of *Claviceps purpurea* (Fries) Tulasne (*Hypocreaceae*), replacing the grain of rye. Grown in Spain. Native of Europe and Asia and found in nearly all cultivated rye fields, as well as on other grasses.

2404. Ergotic, or ergotinic, acid.—An acid substance of indefinite or undetermined chemical composition, derived from ergot.

2405. Sclerotic acid.—Another form of the same.

2406. Ergotinine ($C_{35}H_{40}N_4O_6$).—An alkaloid extracted from ergot.

2407. Ergotine ($C_{50}H_{52}N_2O_3$).—Another alkaloid from the same.

2408. Bonjeans ergotine.—An impure form of the preceding.

2409. Cornutine or ecboline.—Another alkaloid, of uncertain chemical composition, obtained from ergot.

2410. Agaric. White or purging agaric.—The fruiting body of *Fomes Laricis* (Jacq.) Murrill. (*Polyporaceae*—Polypore Family). Parasitic on larches, etc. in Europe and other countries.

[30] The arrangement of the articles in this exhibit is that of the natural sequence of the families to which they belong. They were nearly all presented by Merck & Company, of New York, the exceptions being indicated in the list.

2411. Agaricin. Agaric, Agaricinic, or Laricic, acid ($C_{16}H_{30}O_5$).—An acid extracted from the preceding.

2412. Kefir fungi. Kefir grains.—A substance containing the Kefir bacillus (*Dispora caucasica*) used by the Asiatics in the fermentation of milk.

2413. Cetraria. Iceland moss.—The plant *Cetraria islandica* Acharius. (*Parmeliaceae*—Parmelia Family). Native of cold regions of the north temperate and arctic zones.

2414. Cetraric acid. Cetrarin ($C_{30}H_{30}O_{12}$).—A bitter principle extracted from the preceding.

2415. Lichenin ($C_{12}H_{20}O_{10}$).—A carbohydrate extracted from the same plant.

2416. Orchil lichen. Tartarean, or Canary, moss. Cudweed.—The plant-body of *Lecanora tartarea* Acharius (*Lecanoraceae*—Lecanora Family). Native of Northern Asia.

2417. Cudbear. Persio.—The coloring matter extracted from the preceding and other species of *Lecanora* and *Rocella*.

2418. Litmus. Lacmus. Lacca musica. Turnsole. (See No. 1263).—The purified form of the preceding.

2419. Ordinary litmus.—A less pure form of the preceding.

2420. Azolitmin ($C_7H_7NO_4$).—The chemical constituent that represents the chief coloring principle of litmus.

2421. Aspidium. Male fern.—The rootstock of *Dryopteris Filix-mas* (L.) Schott. (*Polypodiaceae*—Polypody Family). Native of the north temperate zone and high mountains of the Tropics.

2422. Filicic, or Filicinic, acid ($C_{14}H_{16}O_6$).—An acid derived from the preceding.

2423. Filicin.—The anhydrid of the preceding acid and the chief medicinal constituent of male fern.

2424. Resina. Rosin. Colophony. (See No. 1201.)

2425. Abietic acid ($C_{44}H_{64}O_5$).—An acid derived from common rosin.

2426. Sylvic acid. ($C_{20}H_{30}O_2$).—Another acid extracted from common rosin.

2427. Succinum. Amber. (See No. 1227.)

2428. Succinic acid ($C_4H_6O_4$).—An acid derived from the preceding.

2429. Yew leaves. Taxus leaves.—The leaves of *Taxus baccata* L. (*Taxaceae*—Yew Family). Native of Europe and Asia and cultivated for ornament.

2430. Taxine ($C_{37}H_{51}NO_{10}$).—An alkaloid extracted from the preceding.

2431. Joint fir. Helvetian Ephedra.—The stems of *Ephedra helvetica* C. A. Meyer (*Gnetaceae*—Gnetum Family). Native of Europe.

2432. Ephedrine ($C_{10}H_{15}NO$).—An alkaloid extracted from the preceding.

2433. Dextrose. Grape, starch, corn, or honey, sugar. Dextroglucose ($C_6H_{12}O_6$).—A sugar obtained by the inversion of cane sugar and existing naturally in many fruits and other plant substances.

2434. Dextrin ($C_6H_{10}O_5$).—A carbohydrate obtained by conversion from starch.

2435. Levulose. Fructose or fruit sugar ($C_6H_{12}O_6$).—A sugar obtained by hydrolysis from cane sugar and existing naturally in many fruits.

2436. Malt. (See No. 2351.)

2437. Diastase.—An enzyme existing in barley and other grains for the conversion of their starch into sugar.

2438. Maltose. Malt sugar. ($C_{12}H_{22}O_{11}$). Sugar produced from starch by the action of diastase.

2439. Invertin. Invertase. Zymase.—An enzyme existing in yeast, and capable of converting starch into sugar.
2440. Dragon's-blood. Resina Draconis.—A solid balsam obtained as an exudation on the fruit of several species of *Calamus* (*Palmae*—Palm Family). Native of the East Indies.
2441. Benzoic acid ($C_7H_6O_2$).—An acid derived from the preceding and from some other vegetable substances.
2442. Cinnamic acid ($HC_9H_7O_2$).
2443. Areca. Areca nuts. Betel nuts. (See No. 2141.)
2444. Arecoline ($C_8H_{13}NO_2$).—The chief of several alkaloids existing in the preceding.
2445. Convallaria. Lily-of-the-Valley.—The herbage and roots of *Convallaria majalis* L. (See No. 1779.)
2446. Convallarin ($C_{34}H_{62}O_{11}$).—A glucoside existing in the preceding.
2447. Convallamarin ($C_{23}H_{44}O_{12}$).—Another glucoside from the same.
2448. Asparagus root.—The roots of *Asparagus officinalis* L. (*Convallariaceae*—Lily-of-the-Valley Family). Native of Europe and Asia and cultivated.
2449. Asparagus.—The young stems of the same plant.
2450. Asparagin. Asparamide ($C_4H_8N_2O_3+H_2O$).—A constituent of the preceding and of many other plants in their young state.
2451. Squill. Scilla.—The bulb of *Urginea maritima* (L.) Baker. (*Liliaceae*—Lily Family). Native of the Mediterranean region.
2452. Commercial dried squill root.
2453. Scillipicrin.—A bitter principle of uncertain chemical composition contained in the preceding.
2454. Scillitin.—A similar principle from the same.
2455. Scillitoxin.—Another of the same group.
2456. Colchicum root.—The corm of *Colchicum autumnale* L. (Same family). Native of Europe and cultivated as a drug and for ornament.
2457. Colchicum seed.—The seeds of the same plant.
2458. Colchicine ($C_{22}H_{25}NO_6$).—The principal alkaloid of the preceding two products.
2459. Curacao aloes. Aloe curassavica.—The inspissated juice of *Aloe vera* (L.) Webb. (Same family). Native of India and naturalized in the West Indies.
2460. Aloin ($C_{16}H_{16}O_7 + 3H_2O$).—An amaroid existing in the preceding and in other species of *Aloe*.
2461. Cevadilla. Sabadilla.—The seeds of *Schoenocaulon officinale* (Sh. & Sch.) A. Gray. (*Melanthiaceae*—Bunch-flower Family). Native of tropical America.
2462. Sabadine ($C_{29}H_{51}NO_8$).—An alkaloid extracted from the preceding.
2463. Sabadinine. ($C_{27}H_{45}NO_8$).—Another alkaloid from the same.
2464. Cevadine. ($C_{32}H_{49}NO_{11}$).—Another of the same group.
2465. Sabadilline.—Another of the same group.
2466. Veratrum viride. American green hellebore. Indian poke.—The rootstock and roots of *Veratrum viride* Ait. (Same family). Native of eastern North America.
2467. Veratric acid. ($C_9H_{10}O_4$).—An acid extracted from *Veratrum viride* Ait.

2468. Costa Rica sarsaparilla.—The roots of *Smilax ornata* Hooker f. (*Smilaceae*—Smilax Family). Native of Central America.
2469. Smilacin ($C_{26}H_{44}O_{10} + 2\frac{1}{2}H_2O$).—A glucoside existing in the preceding.
2470. Crocus. Saffron. Spanish saffron. (See No. 1270.) The stigmas and upper portion of the style of *Crocus sativus* L. (*Iridaceae*—Iris Family). Native of the Mediterranean region and cultivated.
2471. Crocin.—The crude coloring matter of the preceding.
2472. Madras Curcuma or turmeric (See No. 1406).—Curcuma exported from Madras, India.
2473. Crystalline curcumin ($C_{10}H_{10}O_3$).—The purified coloring matter extracted from Curcuma.
2474. Vanilla, or vanilla beans. (See No. 1412.)
2475. Vanillic, vanillinic, or protocatechuic, acid.—An acid resulting from the oxidation of vanillin.
2476. Vanillin ($C_8H_8O_3$).—The flavoring and odorous principle extracted from vanilla.
2477. Piper nigrum. Black pepper. (See No. 1448).
2478. Piperidine. Hexahydropyridine. ($C_5H_{11}N$).—An alkaloid derived from piperine.
2479. Piperine ($C_{17}H_{10}NO_3$).—An alkaloid existing in black pepper.
2480. Piperic acid ($C_{12}H_{10}O_4$).—An acid resulting from the decomposition of the preceding.
2481. Kava. Methysticum. (See No. 2393.) From the New York drug market.
2482. Methysticin. Kavain ($C_{16}H_{18}O_5$).—A neutral principle existing in Kava.
2483. Cubeb. Cubeba.—The unripe fruit of *Cubeba Cubeba*. (See No. 1795). Native of the East Indies and cultivated. From the New York drug market.
2484. Cubebic acid ($C_{13}H_{14}O_7$).—An acid existing in the preceding.
2485. Cubebin ($C_{10}H_{10}O_3$).—An amaroid existing in cubeb.
2486. Willow bark.—The bark of various species of *Salix* (*Salicaceae*—Willow Family). From the New York drug market.
2487. Salicin. Salicinum ($C_{13}H_{18}O_7$).—A glucoside existing in the preceding.
2488. Natural salicylic acid. Ortho-oxybenzoic acid ($C_7H_6O_3$).—An acid existing in willow and birch bark, wintergreen, and some other plants.
2489. The same made artificially from phenol, or carbolic acid.
2490. Methyl salicylate ($CH_3.C_7H_5O_3$).—A compound of methyl and salicylic acid existing in the plants last named and some others.
2491. Poplar bark.—The bark of various species of *Populus* (*Salicaceae*—Willow Family).
2492. Populin. Benzoylsalicin ($C_{20}H_{22}O_8 + 2H_2O$).—A glucoside existing in the preceding.
2493. Butternut bark. Juglans bark.—The bark of the root of *Juglans cinerea* L. (*Juglandaceae*—Walnut Family). Native of eastern North America. From the New York drug market.
2494. Juglandin.—A resinous substance extracted from the preceding.
2495. Cannabis Indica. Indian hemp. (See No. 550).—The pistillate flowering tops of *Cannabis sativa* L.
2496. Cannabinon.—A purified form of the preceding.

2497. Black oak bark.—The bark of *Quercus velutina* Lam. (*Fagaceae*—Beech Family). Native of eastern North America.
2498. Black oak seeds. Quercitron.—The seeds of *Quercus velutina* Lam. (*Fagaceae*—Beech Family). Native of eastern and central United States.
2499. Acorns of European white, or English, oak.—The seeds of *Quercus Robur* L. Native of western Europe and cultivated. Presented by R. S. Williams.
2500. Quercit. Acorn sugar ($C_6H_7(OH)_5$).—A sugar derived from the preceding and from other acorns.
2501. Oak bark.—The bark of *Quercus velutina* Lam. Native of eastern United States.
2502. Quercitrin. Quercitronic acid ($C_{21}H_{22}O_{12} + 2H_2O$).—A glucoside, which is the yellow coloring matter of the bark of *Quercus velutina* Lam.
2503. Cork.—A tissue that constitutes much of the periderm of most barks.
2504. Suberin. Cork-fat. (See No. 2401.)
2505. Suberic acid (C_8H_{12} $(COOH)_2$).—An acid extracted from the preceding.
2506. Galls. Nutgalls. Galla. (See No. 1347.)
2407. Tannic acid. Acidum tannicum. Gallo-tannic or digallic acid ($C_{14}H_{10}O_9$).—Tannic acid derived from the preceding and of exceptional purity.
2408. The same, of ordinary medicinal quality.
2409. Gallic acid. Acidum gallicum. Trioxybenzoic or trihydroxybenzoic acid ($C_7H_6O_5 + H_2O$).—An acid derived naturally or artificially from the preceding.
2510. Rhubarb. Rheum. Chinese or Turkish rhubarb.—The root of several species of *Rheum* (*Polygonaceae*—Knotweed Family). Used medicinally. Native and cultivated in China.
2511. Rhein. Rheic or Chrysophanic acid. Rhubarb yellow ($C_{15}H_{10}O_4$).—An acid existing in and giving the yellow color to rhubarb.
2512. Emodin. Trioxymethylanthraquinone ($C_{15}H_{10}O_5$).—A principle giving the chief purgative property to rhubarb and a number of other cathartic drugs.
2513. Raffinose. Mellitriose. Gossypose ($C_{18}H_{32}O_{16} + 5H_2O$).—A sugar occuring in beets, cotton seed, and in other vegetable products.

BUTTERCUP FAMILY (*Ranunculaceae*)

2514. Pulsatilla. Pasque flower.—The herbage of *Anemone Pulsatilla* L. and *A. pratensis* L. Native of Europe.
2515. Anemonic acid ($C_{10}H_{10}O_5$).—An acid extracted from the preceding.
2516. Anemonin. Anemonic or pulsatillic camphor ($C_{10}H_8O_4$).—A camphor-like substance extracted from the preceding plants.
2517. Staphisagria. Stavesacre.—The seeds of *Delphinium Staphisagria* L. Native of Africa and cultivated.
2518. Delphinine ($C_{22}H_{35}NO_6$).—An alkaloid extracted from the preceding.
2519. Staphisagrine ($C_{22}H_{33}NO_5$).—Another alkaloid from the same.
2520. Delphinoidine ($C_{42}H_{68}N_2O_7$).—Another alkaloid from the same.
2521. Delphisine ($C_{27}H_{42}N_2O_4$).—Another alkaloid from the same.
2522. Black hellebore. Winter or Christmas rose.—Rootstock of *Helleborus niger* L. Native of Europe and cultivated for ornament.
2523. Helleborein ($C_{37}H_{56}O_{16}$).—A glucoside extracted from the preceding.

2524. Adonis. False hellebore. Pheasant's eye.—The herbage of *Adonis vernalis* L. Native of Europe and cultivated for ornament.
2525. Adonin. Adonidin ($C_{24}H_{40}O_9$).—A glucoside extracted from the preceding.
2526. Adonit ($C_5H_7(OH)_5$).—A sugar extracted from the same plant.
2527. Hydrastis.—The rhizome and roots of *Hydrastis canadensis* L. Native of the eastern and central United States.
2528. Hydrastine ($C_{21}H_{21}NO_6$).—An alkaloid extracted from the preceding.
2529. Hydrastine sulphate ($C_{21}H_{22}NO_6H_2SO_4$).—The sulphate of the same alkaloid.
2530. Canadine hydrochloride ($C_{21}H_{21}HCl$).—The hydrochloride of canadine, an alkaloid from the same plant.
2531. Hydrastinine ($C_{11}H_{11}NO_2$).—An alkaloid derived from hydrastine.
2532. Aconite. Aconitum.—The tuberous root of *Aconitum Napellus* L. Native of Europe and cultivated for ornament and as a drug.
2533. Aconitine, pure or potent ($C_{34}H_{47}NO_{11}$).—An alkaloid derived from the preceding.
2534. Amorphous aconitine.—The preceding, non-crystallized and not pure.
2535. Aconitic acid ($C_6H_6O_6$).—An acid derived from the same plant and existing in a number of others.
2536. Indian aconite. Bish, Bishma, or Bikh root.—The tuberous root of *Aconitum ferox* Wallich. Native of the Himalaya Mountains.
2537. Pseudaconitine. Feraconitine. ($C_{36}H_{49}NO_{12}$).—An alkaloid occurring in the preceding.

2538. Podophyllum. Mandrake. May-apple root.—The rootstock of *Podophyllum peltatum* L. (*Berberidaceae*—Barberry Family). Native of eastern and central North America.
2539. Podophyllin. Resin of Podophyllum.—A resinous extract derived from the preceding.
2540. Podophyllotoxin ($C_{23}H_{24}O_9 + 2H_2O$).—The chief purgative and poisonous principle of the preceding.
2541. Barberry root.—The root of *Berberis vulgaris* L. (Same family). Native of the north temperate zone.
2542. Berberine ($C_{20}H_{18}NO_4$).—An alkaloid extracted from the preceding and existing in many other plants.
2543. Oxyacanthine ($C_{19}H_{21}NO_3$).—Another alkaloid extracted from the same.
2544. *Cocculus indicus*. Fish berries.—The fruits of *Anamirta paniculata* Colebrook. (*Menispermaceae*—Moonseed Family).
2545. Picrotoxin ($C_{45}H_{60}O_{19}$).—An amaroid extracted from the preceding.
2546. Calumba. Colombo.—The root of *Jateorhiza palmata* (Lam.) Miers. (Same family). Native of Madagascar.
2547. Calumbin.—A bitter principle extracted from calumba.
2547. 1. Star Anise. Illicium. (See No. 1827.)
2547. 2. Anethol ($C_{10}H_{12}O$). An aromatic principle extracted from the preceding and some other plants.
2548. Dutch nutmegs. (See No. 1476 et seq.)
2549. Myristic acid ($C_{14}H_{28}O_2$).—An acid extracted from nutmegs.
2550. Asarum. Canada snakeroot. Wild ginger. (See No. 1820.)
2551. Asaron ($C_{12}H_{16}O_3$).—A camphor-like substance extracted from the preceding.

2552. Boldus. Boldo.—The leaves of *Boldu Boldus* (Molina) Lyons. (*Monimiaceae*—Monimia Family). Native of Chile.

2553. Boldin ($C_{30}H_{52}O_8$?).—A glucoside extracted from the preceding.

THE LAUREL FAMILY (*Lauraceae*)

2554. Cassia cinnamon. Cassia bark. (See No. 1499.)

2555. Cinnamic aldehyde (C_9H_8O).—An aldehyde from the preceding.

2556. Laurel berries.—The fruits of *Laurus nobilis* L. (See No. 1512.)

2557. Lauric, Laurinic, or Dodecoic acid ($C_{12}H_{24}O_2$).—An acid derived from the preceding and other aromatic plants.

2558. Paracoto.—The bark of an unknown tree of this family, probably a species of *Nectandra*. Native of Bolivia.

2559. Paracotoin ($C_{12}H_8O_4$).—The active constituent of the preceding.

2560. Coto bark.—The bark of an unknown tree of this family, probably a species of *Nectandra*. Native of Bolivia.

2561. Cotoin [$C_6H_2(OH_2)$ $(OCH_3)COC_6H_5$].—The active principle of the preceding.

2562. Nectandra, Greenheart, or Bibiru bark.—The bark of *Nectandra Rodiaei* Hooker. Native of north-eastern South America.

2563. Berberine. Bebeerine ($C_{19}H_{21}NO_3$).—An alkaloid existing in the preceding and derived under other names from other plants.

2564. Sassafras; wood of root. (See No. 1514.)

2565. Sassafras root bark.

2566. Safrol ($C_{10}H_{10}O_2$).—An odorous principle contained in the preceding.

2567. Camphor wood.—The wood of the camphor tree, *Cinnamomum Camphora* Nees & Eber. (See No. 1841.)

2568. Crude camphor.—The camphor, in its crude state, as distilled from the preceding.

2569. Refined camphor ($C_9H_{16}CO$).—The preceding, redistilled.

2570. Camphoric acid. ($C_{10}H_{16}O_4$).—An acid derived from camphor.

2571. Camphoronic acid ($C_9H_{14}O_6$).—Another acid from the same source.

THE POPPY FAMILY (*Papaveraceae*)

2572. Turkish opium.—The inspissated milky juice obtained in Asia Minor, by incising the unripe capsule of *Papaver somniferum* L. Native of the Orient and cultivated.

2573. Meconic acid ($C_7H_4O_7 + 3H_2O$).—An acid existing in opium.

2574. Morphine. Morphina ($C_{17}H_{19}NO_3 + H_2O$).—The principal one of a large number of alkaloids existing in opium.

2575. Codeine ($C_{18}H_{21}NO_3 + H_2O$).—Another alkaloid of opium, somewhat similar to morphine.

2576. Papaverine ($C_{20}H_{21}NO_4$).—Another alkaloid of opium.

2577. Narcotine ($C_{22}H_{23}NO_7$).—A peculiar alkaloid of opium, being destitute of narcotic properties.

2578. Laudanine ($C_{20}H_{25}NO_4$).—Another alkaloid of opium.

2579. Protopine ($C_{20}H_{17}NO_5$).—Another alkaloid of opium, which also occurs in many other plants of the poppy family.

2580. Thebaine ($C_{19}H_{21}NO_3$).—Another alkaloid of opium, possessing convulsant properties.

2581. Narceine ($C_{23}H_{27}NO_8 + 3H_2O$).—Another alkaloid of opium.
2582. Cryptopine ($C_{21}H_{23}NO_5$).—Another alkaloid of opium.
2583. Bloodroot. Sanguinaria.—The rootstock of *Sanguinaria canadensis* L. Native of eastern North America.
2584. Sanguinarine ($C_{20}H_{15}NO_4 + H_2O$).—The principal alkaloid of the preceding, to which its red coloration is due.
2585. Chelidonium. Garden celandine.—The herbage of *Chelidonium majus* L. Native of Europe.
2586. Chelidonine ($C_{20}H_{19}NO_5H_2O$).—Another alkaloid of bloodroot, occurring also in other plants of the family.
2587. Chelerythrine ($C_{21}H_{17}NO_4$).—Another alkaloid of bloodroot and related plants.
2588. Corydalis cava. Bulbous fumitory.—The tubers of *Capnoides tuberosum* (DC.) Lyons. Native of Europe.
2589. Bulbocapnine ($C_{19}H_{19}NO_4$).—An alkaloid of the preceding.
2590. Corydaline ($C_{22}H_{27}NO_4$).—An alkaloid extracted from the same.
2591. Squirrel corn. Turkey pea. Corydalis root.—The tubers of *Bicuculla canadensis* (Goldie) Millspaugh. Native of the eastern and central U. S.
2592. Fumitory. Earth-smoke. Ladies' ear-drops.—The herbage of *Fumaria officinalis* L. Native of Europe and naturalized in the United States.
2593. Fumaric acid ($C_4H_4O_4$).—An acid extracted from the preceding.
2594. Styrax. (See No. 1857.)
2595. Styracin. Cinnamyl cinnamate ($C_{18}H_{16}O_2$).—An aromatic compound extracted from the preceding and from other balsams.
2596. Styrene. Styrol. Stryolene. Cinnamene (C_8H_8).—Another aromatic substance from the same sources.

2597. Quillaia. Soapbark.—The inner bark of *Quillaia Saponaria* Molino. (*Rosaceae*—Rose Family). Native of Chile.
2598. Saponin ($C_{32}H_{64}O_{18}$).—A glucoside extracted from the preceding and existing in many other plants.
2599. Sapogenin ($C_{14}H_{22}O_2$).—A derivative of the preceding, obtained by boiling it with dilute acids.
2600. Quillaic acid ($C_{19}H_{30}O_{10}$).—An acid extracted from Quillaia.
2601. Brayera. Koosso.—The pistillate inflorescence of *Hagenia abyssinica* (Bruce) Gmelin (Same family). Native of Abyssinia.
2602. Kosin ($C_{31}H_{38}O_{10}$).—A crystalline principle to which the anthelmintic properties of the preceding are due.
2603. Koussein.—An impure form of the preceding.
2604. Sorbus fruits. European mountain ash or Rowan-tree berries.—The fruits of *Sorbus Aucuparia* L. (*Malaceae*—Apple Family). Native of Europe and cultivated for ornament.
2605. Sorbic acid ($C_6H_8O_2$).—An acid extracted from the preceding.
2606. Parasorbic acid. ($C_6H_{10}O_2$).—Another acid from the same.
2607. Sorbin ($C_6H_{12}O_6$).—A non-fermentable sugar derived from the same fruits.
2608. Apples.—The fruits of *Malus Malus* (L.) Britton. (Same family). Native of western Asia and everywhere cultivated for its fruits.
2609. Malic acid ($C_4H_6O_5$).—An acid existing abundantly in apples and occurring in many other vegetable products.

2610. Acetic acid (CH_3COOH).—The acid of vinegar, largely made from apple juice by fermentation and obtained from many other vegetable substances. It is not a proximate principle, but a derivative product.
2611. Apple-tree bark.—The bark of the root of the apple tree.
2612. Phloridzin. Phlorrhizin ($C_{21}H_{24}O_{10}+2H_2O$).—A glucoside from the preceding; also found in the root bark of the pear, plum, cherry, and other trees.
2613. Bitter almond. Amygdala amara. (See No. 1352.)
2614. Wild cherry bark. Prunus virginiana.—The bark of *Padus virginiana* (L.) Mill. (*Amygdalaceae*—Peach Family.) Native of eastern North America.
2615. Amygdalin ($C_{20}H_{27}NO_{11}+3H_2O$).—A glucoside existing in the two preceding and in related plants that yield prussic acid on fermentation with water and a suitable enzyme.
2616. Emulsin.—A substance extracted from the same plant substances that yield the preceding, and containing the enzyme or ferment that causes the production of prussic acid from their amygdalin.
2617. Amygdalic acid ($C_8H_8O_3$).—A derivative acid that can be made from the same vegetable substances that yield the preceding.
2618. Conglutin.—An albuminous substance or casein existing in sweet and bitter almonds.
2619. Acacia. Gum arabic.—A gum exuding from several species of *Acacia* (*Mimosaceae*—Mimosa Family) growing in northern Africa and adjacent regions.
2620. Arabic acid ($C_6H_{10}O_5H_2O$).—An acid that largely composes the preceding gum.
2621. Erythrophloeum. Sassy-bark.—The bark of *Erythrophloeum guineense* Don. (Same family). Native of tropical Africa and used as an arrow-poison.
2622. Erythrophleine hydrochloride. The hydrochloride of an alkaloid of undetermined chemical composition, extracted from the preceding.
2623. Catechu. (See No. 1363.)
2624. Catechu-tannic acid.—A form of tannic acid contained in the preceding.
2625. Catechin. Catechuic acid ($C_{21}H_{20}O_9+5H_2O$).—An acid extracted from Catechu.
2626. Protocatechuic acid.—Another acid having the same origin.
2627. Brazil wood. (See No. 1280.)
2628. Brasilin ($C_{16}H_{14}O_5$).—The coloring matter of the preceding.
2629. Copaiba. Canima.—An oleo-resin found in cavities in the trunk of various species of *Copaiba*. (Same family). Native of tropical America and Africa.
2630. Resin of Copaiba.—The resin extracted from the preceding.
2631. Copaibic acid. A purified form of the preceding, but of indefinite chemical composition.
2632. Logwood. Haematoxylon. (See No. 1282.)
2633. Haematoxylin ($C_{16}H_{14}O_6H_2O$).—The red coloring matter of logwood.
2634. Kino.—The inspissated juice of the trunk of *Pterocarpus Marsupium* Roxb. (Same family). Native of the East Indies.
2635. Red Saunders. Red sandalwood. Santalum rubrum.
2636. Santalin. Santalic acid ($C_{15}H_{14}O_5$).—The red coloring matter of the preceding.

THE PEA FAMILY (*Fabaceae*)

2637. Calabar bean. Physostigma.—The seed of *Physostigma venenosum* Balfour. Native of tropical Africa.

2638. Physostigmine. Eserine ($C_{15}H_{21}N_3O_2$).—The most important alkaloid of the preceding.

2639. Eseridine ($C_{15}H_{23}N_3O_3$).—Another alkaloid of the same seed.

2640. Indigo plant.—The herbage of *Indigofera Suffruticosa* Willd. Native of tropical and sub-tropical America and cultivated.

2641. Indigo.—The crude coloring matter extracted from the preceding.

2642. Indigotin ($C_{16}H_{10}N_2O_2$).—The same, purified.

2643. Peanuts.—The seeds of *Arachis hypogaea* L. Native of tropical America and widely cultivated . From the New York market.

2644. Arachic acid ($C_{20}H_{40}O_2$).—An acid extracted from the preceding.

2645. Goa powder.—A substance found in cavities of the trunk of *Andira Araroba* Aguiar. Native of Brazil.

2646. Chrysarobin.—The active principle extracted from Goa powder, but of indefinite chemical composition.

2647. Chrysophanic acid ($C_{30}H_{26}O_7$).—The purified active principle of the same.

2648. Balsam of Peru.—A liquid balsam obtained from *Toluifera Pereirae* (Royle) Baill. Native of Central America.

2649. Benzyl benzoate.—An aromatic compound extracted from the preceding.

2650. Benzyl cinnamate.—Another aromatic compound extracted from the preceding.

2651. Locust or Robinia bark.—The bark of *Robinia pseudacacia* L. Native of eastern United States.

2652. Abrus. Jequirity. Love-peas. Crabs' eyes. Prayer-beads.—The seeds of *Abrus Abrus* (L.) W. F. Wight. Native of the East Indies and naturalized in all tropical countries.

2653. Abrin.—A mixture of extremely active toxalbumins extracted from the preceding.

2654. Spanish, or Italian, licorice root. (See No. 1533.)

2655. Russian licorice root. (See No. 1536.)

2656. Glycyrrhizin. Glycyrrhizic acid ($C_{44}H_{63}NO_{18}$).—The sweet principle existing in licorice.

2657. Scoparius. Broom.—The tops of *Cytisus scoparius* (L.) Link. Native of Asia and Europe.

2658. Sparteine ($C_{15}H_{26}N_2$).—The chief alkaloid of the preceding.

2659. Sparteine sulphate.—The salt of the preceding with sulphuric acid.

2660. Scoparin ($C_{20}H_{20}O_{10}+5H_2O$).—Another constituent of the same.

2661. Cytisine. Ulexine. Baptitoxine ($C_{11}H_{14}N_2O$).—Another alkaloid of the same; also from related plants.

2662. Laburnum seeds. Bean trefoil. Golden-chain or golden-shower seeds.—The seeds of *Cytisus Laburnum* L. Native of southern Europe and cultivated. Another source of cytisine.

2663.

2664. Ormosia. Bread-tree seeds. Large coral-bean.—The seeds of *Ormosia dasycarpa* Jacq. Native of the West Indies.

2665. Ormosine.—A poisonous alkaloid extracted from the preceding.

2666. Coronilla. Axseed.—The herbage of *Coronilla scorpioides* (L.) Koch. Native of Europe.
2667. The seeds of the preceding species.
2668. Coronillin ($C_7H_{12}O_6$).—A glucoside extracted from the preceding.
2669. Ononis root. Rest harrow.—The root of *Ononis spinosa* L. Native of Europe.
2670. Ononin ($C_{25}H_{26}O_{11}$).—A glucoside extracted from the preceding.
2671. Fenugreek. Foenum graecum.—The seeds of *Trigonella Foenum-Graecum* L. Native of western Asia and widely cultivated for food.
2672. Trigonelline ($C_6H_7NO_2$).—An alkaloid occurring in the preceding.
2673. Baptisia. Dyer's greenweed. Wild indigo.—The root of *Baptisia tinctoria* (L.) R. Br. Native of eastern and central North America.
2674. Baptisin ($C_{26}H_{32}O_{14}+9H_2O$).—A glucoside extracted from the preceding.
2675. Legumin. Vegetable casein.—An albuminous nutrient of similar nature to that of animal casein, existing largely in leguminous plants and also occurring in other vegetable foods. It is not of definite chemical composition.
2676. Anagyris seeds.—The seeds of *Anagyris foetida* L. Native of Europe.

2677. Wood sorrel.—The herbage of *Oxalis Acetosella* L. (*Oxalidaceae*—Wood-sorrel Family). Native of Europe and America.
2678. Oxalic acid.—A very poisonous acid, first extracted from *Oxalis*. It occurs also in *Rumex*, pie-plant, and other plants, and is also made artificially.
2679. Pelargonium leaves.—The leaves of various species of *Pelargonium* (*Geraniaceae*—Geranium Family). Mostly natives of South Africa.
2680. Pelargonic acid.—An organic acid extracted from the preceding.
2681. Coca. Peruvian, Bolivian, or Huanuco coca.—The leaves of *Erythroxylon Coca* Lam. (*Exythroxylaceae*—Coca Family). Native of the eastern Andes, and now known only under cultivation or as an escape.
2682. Cocaine ($C_{17}H_{21}NO_4$).—An important alkaloid extracted from the preceding and other species of *Erythroxylon*.
2683. Ecgonine ($C_9H_{15}NO_3H_2O$).—An important alkaloid extracted from the preceding and other species of *Erythroxylon*.
2684. Truxillo coca. Small coca.—The leaves of *Erythroxylon truxillense* Rusby. Native of Peru and cultivated.
2685. Truxillic acid. Alpha ($C_{18}H_{16}O_4$).—An acid existing in the preceding.
2686. Cocamine ($C_{19}H_{23}NO_4$).—Another alkaloid from the same leaves.
2687. Benzyl-ecgonin.—Another alkaloid of coca leaves.

THE RUE FAMILY (*Rutaceae*)

2688. Ruta. Rue. Garden rue.—The herbage of *Ruta graveolens* L. Native of Europe and cultivated.
2689. Rutin.—A constituent of the preceding.
2690. Pernambuco. Jaborandi. Pilocarpus.—The leaves of *Pilocarpus Jaborandi* Holmes. Native of Brazil.
2691. Small-leaved Jaborandi or Pilocarpus.—The leaves of *Pilocarpus microphyllus* Stapf. Native of Brazil.
2692. Pilocarpine ($C_{11}H_{16}N_2O_2$).—The principal alkaloid of Jaborandi leaves.
2693. Jaborine ($C_{22}H_{32}N_4O_4$?).—Another alkaloid, of uncertain identity, contained in Jaborandi.

2694. Buchu leaves. Short buchu.—The leaves of *Barosma betulina* (Thunb.) Bartl. & Wend. Native of South Africa.

2695. Barosmin.—A glucoside existing in the leaves of various species of *Barosma* and in some other plants.

2696. Bitter orange peel. (See No. 1556.)

2697. Hesperidin ($C_{50}H_{60}O_{27}$).—A glucoside existing in the preceding and in other plants of this family.

2698. Lemons. (See No. 1901.)

2699. Citral ($C_{10}H_{16}O$).—An aldehyde existing in the oil of lemon peel and some other aromatic plant constituents.

2700. Citric acid.—An acid existing in the juice of lemons and related fruits, and in some other vegetable products; also made artificially.

2701. Jamaica Quassia. Bitter wood.—The wood of *Picrasma excelsa* (Sw.) Planch. (*Simaroubaceae*—Ailanthus Family). Native of Jamaica.

2702. Surinam Quassia.—The wood of *Quassia amara* L. (Same family). Native of Central America and northern South America.

2703. Quassiin ($C_{10}H_{12}O_3$).—An amaroid existing in one or both of the two preceding. There is some doubt as to the identity of quassiin from the two sources.

2704. Cedron seeds.—The seeds of *Simaba Cedron* (R. Br.) Planch. (Same family). Native of northern South America and cultivated for its fruit.

2705. Cedrin.—The bitter principle of the preceding seeds.

2706. Senega. Seneca snakeroot.—The root of *Polygala Senega* L. (*Polyalaceae*—Milkwort Family). Native of eastern and central North America.

2707. Senegin. Polygalic acid ($C_{32}H_{52}O_{17}$).—A glucoside of the saponin group existing in the preceding.

2708. Ricinus. Castor-oil seed.—The seeds of *Ricinus communis* L. (*Euphorbiaceae*—Spurge Family). Native of Europe and Asia and cultivated.

2709. Ricin.—A toxalbumin extracted from the preceding seeds.

2710. Euphorbium.—The inspissated milky juice of *Euphorbia resinifera* Berg. (Same family). Native of northern Africa.

2711. Kamala.—The hairs and glands removed from the fruit of *Mallotus philippinensis* (Lam.) Muell. Arg. Native of the East Indies.

2712. Kamalin. Rottlerin ($C_{32}H_{29}O_7COOH$).—The coloring matter extracted from the preceding.

2713. Cashew, or Caju, nuts.—The seed-pods of *Anacardium occidentale* L. (*Anacardiaceae*—Sumac Family). Native of tropical America and cultivated.

2714. Oriental cashew. Malacca nut or bean. Marking-nut.—The seed-pod of *Semecarpus Anacardium* L.f. (Same family). Native of the East Indies.

2715. Anacardic acid ($C_{22}H_{32}O_3$).—An acid extracted from the two preceding.

2716. Chian turpentine. Scio turpentine.—A turpentine derived from *Pistacia terebinthus* L. (Same family). Native of the Mediterranean region.

2717. Cascara Sagrada.—The bark of *Rhamnus Purshiana* DC. (*Rhamnaceae*—Buckthorn Family). Native of the Pacific Coast region of the northern United States and adjacent parts of Canada.

2718. Cascara-emodin. Frangulic acid.—The emodin or anthraquinone extracted from the preceding.

2719. Wahoo. Euonymus. The bark of *Euonymus atropurpureus* Jacq. (*Celastraceae*—Staff-tree Family). Native of the eastern and central United States.

2720. Euonymin.—A resinous glucosidal substance of indefinite chemical composition extracted from the preceding and representing its medicinal activity.

2721. Guarana. (See No. 2210.)

2722. Guaranine.—Caffeine extracted from Guarana.

2723. Horsechestnut bark.—The bark of *Aesculus Hippocastanum* L. (*Sapindaceae*—Soapberry Family). Native of Asia and cultivated for ornament.

2724. Aesculin $C_{15}H_{16}O_9 + 1\frac{1}{2}H_2O$).—A glucoside extracted from the preceding.

2725. Grapes.—The fruits of various species and varieties of *Vitis*.

2726. Lees. The sediment deposited by wine of grapes.

2727–2730. Crude tartar or Argols.—Partially purified lees, the samples containing different percentages of tartaric acid.

2731. Tartaric acid ($C_4H_6O_6$).—The purified form of the preceding.

2732. Bitartrate of potash. Potassium bitartrate.—A compound of tartaric acid with potassium.

2733. Cocoa shells. (See No. 2296.)

2734. Theobromine ($C_7H_8N_4O_2$).—An alkaloid extracted from the preceding and related to caffeine.

2735. Tea leaves. (See No. 2182.)

2736. Theophylline ($C_7H_8N_4O_2.H_2O$).—An alkaloid existing in tea.

2737. Camellin.—A glucoside existing in the seeds of *Camellia japonica* L. (Same family). Native of Japan and cultivated for ornament.

2738. Annatto. Bixa seeds. (See No. 1303.)

2739. Bixin ($C_{28}H_{34}O_5$).—The coloring matter of the preceding.

2740. Chaulmoogra seeds.—The seeds of *Taraktogenos Kurzii* King. (*Flacourtiaceae*—Flacourtia Family). Native of eastern Asia.

2741. Gynocardic acid ($C_{14}H_{24}O_2$).—An acid extracted from the oil of the preceding.

2742. Papaya leaves. Carica leaves.—The leaves of *Carica Papaya* L. (*Caricaceae*—Papaw Family). Native of tropical America and cultivated for its edible fruit.

2743. Carpaine ($C_{14}H_{25}NO_2$).—An alkaloid extracted from the leaves of the preceding.

2744. Papaya fruit. Papaw.—The fruit of the same plant.

2745. Papaw juice.—The inspissated milky juice obtained by incising the preceding in an unripe state.

2746. Papayotin.—A purified form of the preceding.

2746.1. Papoid.—A purified extract of papaw juice. Presented by H. H. Rusby.

2747. Mezcal, Mezcal, or Muscale buttons.—The dried tops of the stems of a cactus, *Lophophorus Williamsii* (Lem.) Rusby. (*Cactaceae*—Cactus Family). Native of northern Mexico.

2748. Anhalonine ($C_{12}H_{15}NO_3$).—An alkaloid extracted from the preceding.

2749. Mezereum.—The bark of several species of *Daphne* (*Thymeliaceae*—Mezereon Family). Native of Europe and cultivated for ornament.

2750. Daphnetin ($C_9H_6O_4$).—A bitter principle extracted from the preceding.

2751. Pomegranate bark. Granatum.—The bark of *Punica Granatum* L. (*Punicaceae*—Pomegranate Family). Native of Persia and cultivated for its edible fruit.

2752. Pelletierine ($C_8H_{15}NO$).—An alkaloid extracted from the preceding.
2753. Cloves. Caryophyllus. (See No. 1561.)
2754. Eugenol. Eugenic acid ($C_{10}H_{12}O_2$). An aromatic constituent of cloves.
2755. Eucalyptus leaves. Blue-gum leaves.—The leaves of *Eucalyptus Globulus* Labill. (Same family). Native of Australia and cultivated in warm countries.
2756. Eucalyptol. Cineol. ($C_{10}H_{18}O$).—The aromatic constituent of the preceding and occurring in other plants of this family.
2757. Eucalyptolene.—Another aromatic constituent of the same.
2758. Eucalyptene ($C_{10}H_{16}$).—A hydrocarbon extracted from leaves of the same.
2759. Myrtle leaves.—The leaves of *Myrtus communis* L. (Same family). Native of Europe and cultivated.
2760. Myrtol.—An aromatic constituent of the preceding.

THE CARROT FAMILY (*Ammiaceae*)

2761. Cummin or Cumin fruit or seed.—The fruit of *Cuminum Cyminum* L. Native of Europe and Asia and cultivated.
2762. Cuminic acid. Isotropylbenzoic acid ($C_{10}H_{12}O_2$).—A derivative product from the preceding.
2763. Cumene (C_9H_{12}).—An aromatic constituent of cumin.
2764. Conium.—The fruit of *Conium maculatum* L. Native of Europe and Asia and cultivated.
2765. Coniine ($C_8H_{17}N$).—The principal alkaloid of the preceding.
2766. Conhydrine ($C_8H_{17}NO$).—Another alkaloid from the same.
2767. Deadly carrot. Thapsia.—The root of *Thapsia garganica* L. Native of the Mediterranean region.
2768. Thapsia resin.—A resinous substance extracted from the preceding.
2769. Anise, Anise seed or fruit. (See No. 1573.)
2770. Anisic acid. Paramethoxybenzoic acid. Umbellic acid ($C_8H_8O_3$). An acid extracted from the preceding.
2771. Anisol (C_7H_8O).—An aromatic constituent of anise.
2772. Parsley fruit or seed.—The seed of *Apium Petroselinum* L. (See No. 1578.)
2773. Apiin ($C_{27}H_{32}O_{16}$).—A glucoside extracted from the preceding.
2774. Apiol. Parsley camphor.—An aromatic constituent of the same.
2775. Hog fennel. Sow fennel. Sulphur root.—The root of *Peucedanum officinale* L. Native of Europe.
2776. Peucedanin ($C_{16}H_{16}O_4$).—A bitter principle extracted from the preceding.
2777. Resorcin. Resorcinol. Metadioxybenzene. ($C_6H_6O_2$).—A diatomic phenol derived from various gum-resins of this family and also made synthetically.
2778. Caraway fruit or seed. (See No. 1576.)
2779. Carvon-d.—The principal aromatic constituent of the preceding.
2779. 1. Oenanthe. Water hemlock. Dead tongue.—The root of *Oenanthe crocata* L. Native of Europe. Extremely poisonous, but medicinal.
2779. 2. Oenanthol.—A substance extracted from the preceding.

2780. Bearberry. Uva-ursi.—The leaves of *Uva-ursi Uva-ursi* (L.) Britton (*Ericaceae*—Heath Family). Native of Europe and North America.
2781. Urson ($C_{30}H_{48}O_3 + 2H_2O$).—A crystalline principle from the preceding.

2782. Arbutin ($C_{12}H_{16}O_7$).—The principal medicinal constituent of the leaves of the same. A glucoside.

2783. Cyclamen. Sow-bread. Bleeding nun.—The bulb of *Cyclamen europaeum* L. (*Primulaceae*—Primrose Family). Native of Europe and cultivated for ornament.

2784. Cyclamin. Arthanitin ($C_{20}H_{24}O_{10}$).—A saponin-like glucoside existing in the preceding.

2785. Siam benzoin.—A solid balsam exuding from wounds in the trunk of *Styrax tonkinense* Craib. (*Styraceae*—Storax Family). Native of and cultivated in Siam.

2786. Sumatra benzoin.—A similar balsam from *S. Benzoin* Dryander.

2787. Benzoic acid. ($C_7H_6O_2$).—An acid extracted from the preceding and existing in many other plants.

2788. Manna.—The saccharine substance exuding from incisions in the bark of *Fraxinus Ornus* L. (*Oleaceae*—Olive Family). Native of Europe.

2789. Privet. Ligustrum. Prim. Primwort.—The leaves of *Ligustrum vulgare* L. (*Oleaceae*—Olive Family). Native of Europe and cultivated for hedges and for ornament.

2790. Lilac leaves.—The leaves of *Syringa vulgaris* L. (Same family). Native of Asia and Europe and cultivated for ornament.

2791. Syringin ($C_{17}H_{24}O_9 + H_2O$).—A glucoside derived from the leaves of the two preceding plants.

2792. Gelsemium. Yellow jessamine.—The rootstock and roots of *Gelsemium sempervirens* Ait. (*Loganiaceae*.—Nux-vomica Family). Native of the southeastern United States and adjacent islands.

2793. Gelsemine ($C_{22}H_{38}N_2O_4$).—An alkaloid extracted from the preceding.

2794. Gelseminine ($C_{22}H_{26}N_2O_3$).—Another alkaloid from the same.

2795. Nux-vomica. Dog-button.—The seed of *Strychnos Nux-vomica* L. (Same family). Native of the East Indies.

2796. Strychnine ($C_{21}H_{22}N_2O_2$).—The principal alkaloid of the preceding.

2797. Brucine ($C_{23}H_{26}N_2O_4 + 4H_2O$).—Another alkaloid from the same.

2798. Ignatia bean. Bean of St. Ignatius.—The seed of *Strychnos Ignatii* Lindl. Native of the Philippine Islands. Contains the preceding alkaloids.

2799. American Centaury. Rose pink. Bitter clover.—The herbage of *Sabbatia angularis* (L.) Pursh. (*Gentianaceae*—Gentian Family). Native of the eastern United States.

2800. Quinine flower.—The herbage of *Sabbatia Elliottii* Steudel. (Same family.) Native of the southeastern United States.

2801. Sabbatin.—A bitter glucoside extracted from species of *Sabbatia*.

2802. Gentian. Yellow gentian. Gentiana.—The rootstock and roots of *Gentiana lutea* L. (Same family). Native of Europe.

2803. Gentianin.—The impure form of gentianic acid, extracted from the preceding.

2804. Gentisin. Gentianic acid ($C_{13}H_5O_2(OH)_2OCH_3$).—The purified form of the preceding.

THE DOGBANE FAMILY (*Apocynaceae*)

2805. Geissospermum bark. Pao Pereirae bark.—The bark of *Geissospermum Vellozii* Allem. Native of Brazil and one of the ingredients of Indian arrow-poisons.

2806. Geissospermine ($C_{19}H_{24}N_2O_2 + H_2O$).—The poisonous alklaoid of the preceding.

2807. Vellosine. Pereirine. ($C_{19}H_{24}N_2O$). Another alkaloid from the same.

2807.1. Quebracho, or white quebracho bark. Aspidosperma.—The bark of *Aspidosperma quebracho-blanco* Schlecht. Native of Argentine and adjacent regions.

2808. Aspidospermine ($C_{22}H_{30}N_2O_2$).—The principal alkaloid of the preceding.

2809. Aspidosamine ($C_{22}H_{28}N_2O_2$).—Another alkaloid from the same.

2810. Quebrachine ($C_{21}H_{26}N_2O_3$).—Another alkaloid from the same.

2811. Quebrachamine.—Another alkaloid from the same.

2812. Oleander leaves.—The leaves of *Nerium Oleander* L. Native of the Mediterranean region and cultivated for ornament.

2813. Conessine ($C_{24}H_{40}N_2$).—An alkaloid extracted from the preceding and occurring in related plants.

2814. Neriantin.—A glucoside extracted from the same leaves.

2815. Oleandrin.—Another glucoside from the same.

2816. Canadian hemp. Apocynum.—The rootstock and roots of *Apocynum cannabinum* L. Native of North America.

2817. Apocynin.—An active constituent extracted from the preceding.

2818. Cynotoxin ($_{20}H_{23}O_6$).—The poisonous and medicinal glucoside of *Apocynum.*

2819. Alstonia. Dita bark. Australian quinine bark or fever bark.— The bark of *Alstonia constricta* F. Muller. Native of Australia.

2820. Chlorogenine. Alstonine ($C_{21}H_{20}N_2O_4.3\frac{1}{2}H_2O$).—The principal alkaloid of the preceding.

2821. Echitamine. Ditaine. ($C_{22}H_{28}N_2O_4.4H_2O$).—Another alkaloid from the same.

2822. Porphyrine ($C_{21}H_{25}N_3O_2$).—Another alkaloid from the same.

2823. Green Strophanthus.—The seeds of *Strophanthus Kombe* Oliver. Native of tropical Africa.

2824. The same in their pod.

2825. Strophanthin ($C_{40}H_{66}O_{19}$).—A poisonous and medicinal glucoside of the preceding and other species of *Strophanthus.*

2826. Thevetia seeds. Yellow oleander. Exile tree.—The seeds of *Cerbera Thevetia* L. Native of tropical America and cultivated. An ingredient of arrow-poisons.

2827. Cerberin. Cerberid. ($C_{25}H_{35}O_{12}$).—A glucoside extracted from the preceding.

2828. Curaré. Woorara.—A mixture of extracts of the preceding and other poisonous plants of South America. The principal arrow-poison of the South American Indians, and differing in composition among the various tribes.

THE MILKWEED FAMILY (*Asclepiadaceae*)

2829. Gymnema leaves.—The leaves of *Gymnema sylvestre* R. Br. Native of British India.

2830. Gymnemic acid ($C_{32}H_{55}O_{12}$).—An acid extracted from the preceding and possessing the power to destroy temporarily the power of tasting bitter or sweet.

2831. Condurango.—The bark of *Marsdenia Condurango* Nichols. Native of Ecuador.
2832. Condurangin.—A mixture of glucosides of the preceding.

THE MORNING-GLORY FAMILY (*Convolvulaceae*)

2833. Scammony root.—The root of *Convolvulus Scammonia* L. Native of western Asia.
2834. Mexican, or false, scammony.—The rootstock or tuber of *Ipomoea orizabensis* (Pel.) Ledan. Native of Mexico.
2835. Resin of scammony.—The resin extracted from No. 2833.
2836. The same in the powdered state.
2837. Convolvulin ($C_{31}H_{50}O_{16}$).—A glucoside extracted from the preceding and related plants.
2838. The same in the powdered state.
2839. Jalap. Jalapa.—The tuberous root of *Exogonium purga* (Wend.) Lindley. Native of Mexico and cultivated as a drug.
2840. Resin of jalap.—The resin extracted from the preceding.
2841. Alkanet. Alkanna.—The root of *Anchusa officinalis* L. (See No. 1311.)
2842. Alkannin. Alkanet extract.—A coloring extract of indefinite composition extracted from the preceding.

THE MINT FAMILY (*Labiatae*)

2843. Thyme. Thymus. Garden thyme. (See No. 1585.)
2844. Thymol ($C_{10}H_{14}O$).—A phenol, the active constituent of thyme.
2845. Thymene ($C_{10}H_{16}$).—A hydrocarbon from the same.
2846. Japanese peppermint.—The herbage of *Mentha arvensis piperascens*. Native of eastern Asia.
2847. Japanese menthol or peppermint camphor ($C_{10}H_{20}O$).—The camphor obtained from the preceding and other species of *Mentha*.
2848. Peppermint. Common peppermint. *Mentha piperita* L. (See No. 1583).
2849. American menthol.—Menthol derived chiefly from the preceding.

THE POTATO FAMILY (*Solanaceae*)

2850. Belladonna leaves.—The leaves of *Atropa Belladonna* L. Native of Europe and cultivated as a drug.
2851. Belladonna root.—The root of the same plant.
2852. Atropic acid ($C_9H_8O_2$).—An acid existing in the two preceding.
2853. Atropine. Atropia ($C_{17}H_{23}NO_3$).—The principal alkaloid of the same plant and also existing in related plants.
2854. Tropic acid. Isotropic acid ($C_9H_{10}O_3$).—Another acid derived from the same plants.
2855. Belladonnine ($C_{17}H_{21}NO_2$).—Another alkaloid existing in the same plants.
2856. Tobacco. (See No. 2066.)
2857. Nicotine hydrochloride ($C_{10}H_{14}N_2.2HCl$).—The compound of hydrochloric acid with nicotine, the principal alkaloid of tobacco.
2858. Potato sprouts and tops.—The young stems and foliage of *Solanum tuberosum* L. Native of America and everywhere cultivated as a food, except in hot countries.

2859. Solanine ($C_{42}H_{75}NO_{15}$).—A poisonous alkaloid existing in the preceding.
2860. Solanidine ($C_{26}H_{41}NO_2$).—A decomposition alkaloid from the preceding.
2861. Stramonium leaves. Thorn-apple. Jimson weed. Jamestown weed.—Leaves of *Datura Stramonium* L. Native of Asia and widely introduced.
2862. Stramonium seed.—The seed of the same plant.
2863. Daturine ($C_{17}H_{23}NO_3$).—An alkaloid existing in the preceding two, and in other species of *Datura*.
2864. Henbane leaves. Hyoscyamus.—The leaves of *Hyoscyamus niger* L. Native of Europe and Asia and cultivated as a drug.
2865. Henbane seeds.—The seeds of the same plant.
2866. Hyoscyamine ($C_{17}H_{23}NO_3$).—An alkaloid derived chiefly from henbane and existing in some other plants of this family.
2867. Hyoscine hydrobromide ($C_{17}H_{21}NO_4.HBr + 3H_2O$).—The compound of hydrobromic acid with hyoscine, another alkaloid of the same plant.
2868. Duboisia. Corkwood elm.—The leaves of *Duboisia myoporoides* R. Br. Native of Australia and neighboring islands.
2869. Duboisine.—Hyoscyamine extracted from the preceding.
2870. Capsicum. Cayenne, African, or red, pepper. (See No. 1594.)
2871. Hungarian paprika. (See No. 1599).
2872. Capsicin.—The oleoresin, of indefinite composition, extracted from the the preceding two substances.

THE FIGWORT FAMILY (*Scrophulariaceae*)

2873. Leptandra. Culver's root.—The rootstock and root of *Leptandra virginica* (L.) Nutt. Native of eastern North America.
2874. Leptandrin.—The resinoid substance of indefinite chemical composition, extracted from the preceding.
2875. Digitalis. Foxglove.—The leaves of *Digitalis purpurea* L. Native of Europe and cultivated as a drug.
2876. The seeds of the preceding species.
2877. Digitalin. Digitin ($C_{27}H_{46}O_{14} + 5H_2O$).—The principal medicinal glucoside of the preceding.
2878. Digitalein.—A glucoside of uncertain identity from the same leaves.
2879. Digitonin. Another glucoside from the same.
2880. Digitoxin ($C_{28}H_{46}O_{10}$).—Another glucoside from the same.
2881. Digitophyllin $C_{32}H_{52}O_{10}$).—Another constituent of the same group.
2882. Gratiola. Hedge hyssop. Herb of grace.—The herbage of *Gratiola officinalis* L. Native of Europe.
2883. Gratiolin ($C_{20}H_{34}O_7$).—A glucoside extracted from the preceding.

2884. European wild senna.—The herbage of *Globularia Alypum* L. (*Globulariaceae*—Globularia Family.) Native of the Mediterranean region.
2884.1. Globularin ($C_{15}H_{20}O_8$).—A glucoside occurring in the preceding.
2885. Adhatoda. Malabar-nut plant.—The leaves of *Adhatoda Adhatoda* (L.) Lyons. (*Acanthaceae*—Acanthus Family). Native of British India.
2886. Vasicine.—An alkaloid extracted from the preceding.

THE MADDER FAMILY (*Rubiaceae*)

2887. Carthagena Ipecac. Ipecacuanha. Raisilla.—The root of *Uragoga granatensis* Baill. (?). Perhaps *U. acuminata* (Benth.) Kuntze. Native of northern South America.

2888. Brazilian ipecac.—The root of *U. Ipecacuanha* (Brot.) A. Rich. Native of Brazil.

2889. Emetine ($C_{15}H_{22}NO_2$).—An alkaloid extracted from the two preceding.

2890. Cephaeline ($C_{14}H_{20}NO_2$).—Another alkaloid from the same.

2891. Calisaya. Yellow Cinchona.—The bark of *Cinchona Calisaya* Wedd. Native of Bolivia and southern Peru, and cultivated, mostly in Java.

2892. Tabla calisaya.—The same in flat pieces, with the outer bark removed.

2893. Red Cinchona. Red Peruvian bark.—The bark of *Cinchona succirubra* Pavon. Native of Peru and cultivated as a drug.

2894. Pale Cinchona.—The bark *C. officinalis L.* Native of Ecuador and cultivated.

2895. Quinic acid. ($C_7H_{12}O_6 + H_2O$).—An acid existing in *Cinchona* bark.

2896. Quinovic acid ($C_{24}H_{38}O_4$).—Another acid of the same.

2897. Quinine sulphate ($C_{20}H_{24}N_2O_2.H_2SO_4 + 7H_2O$).—The compound of sulphuric acid with quinine, the principal alkaloid of *Cinchona*.

2898. Cinchonine ($C_{19}H_{22}N_2O$).—Another alkaloid of *Cinchona*.

2899. Cinchonidine ($C_{19}H_{22}N_2O$).—Another alkaloid of the same group.

2900. Quinidine ($C_{20}H_{24}N_2O_2 + 2\frac{1}{2}H_2O$).—Another of this group of alkaloids.

2901. Quinoidine.—A mixture of alkaloids (non-crystallizable) existing in the liquor after the removal of the crystallizable alkaloids.

2902. Cuprea bark. False Cinchona.—The bark of *Remijia pedunculata* Flueckiger. Native of Colombia.

2903. Another sample of the same.

2904. Cupreine ($C_{19}H_{22}N_2O_2 + 2H_2O$).—An alkaloid from the preceding two.

2905. Cinchonamine ($C_{19}H_{24}N_2O$).—An alkaloid from false Cuprea bark.

2906. Coffee. (See No. 2213.)

2907. Caffeine. Caffeina ($C_8H_{10}N_4O_2 + H_2O$).—An alkaloid of coffee, tea, and some other plants.

2908. Valerian. Valeriana.—The rootstock and roots of *Valeriana officinalis* L. (*Valerianaceae*—Valerian Family). Native of northern Europe and Asia.

2909. Valerianic, or valeric, acid ($C_5H_{10}O_2$).—An acid extracted from the preceding and from some other plants; also made artificially.

2910. Bryony. White bryony. Bryonia.—The root of *Bryonia alba* L. or of *B. dioica L.* (*Cucurbitaceae*—Cucumber Family). Native of Europe.

2911. Bryonin ($C_{48}H_{80}O_{19}$?).—A bitter principle extracted from the preceding.

2912. Squirting cucumber. Elaterium fruits.—The fruits of *Ecballium Elaterium* (L.) A. Rich. (Same family). Native of Mediterranean region.

2913. Elaterium.—A substance of indefinite composition, deposited by the juice of the preceding fruit.

2914. Elaterinum. Elaterin. ($C_{20}H_{28}O_5$).—A neutral principle that gives the poisonous and medicinal property to the preceding.

2915. Turkish colocynth or bitter apple.—The peeled dried fruit of *Citrulllus Citrullus* (L.) Karst. Grown in Asia Minor.

2916. Citrullin.—A resinous extract, of indefinite composition, extracted from the preceding.
2917. Colocynthin ($C_{56}H_{64}O_{23}$).—The constituent that gives the medicinal property to the preceding two.
2918. Lobelia. Indian tobacco.—The herbage of *Lobelia inflata* L. (*Lobeliaceae*—Lobelia Family). Native of eastern North America.
2919. The seeds of the preceding species.
2920. Lobeline ($C_{18}H_{23}NO_2$).—The poisonous and medicinal alkaloid of the preceding.
2921. European acrid lettuce. Wild lettuce.—The herbage of *Lactuca virosa* L. (*Cichoriaceae*—Chicory Family). Native of Europe.
2922. Lactucarium.—The inspissated milky juice of the preceding.
2923. Lactucin ($C_{11}H_{14}O_4$).—A bitter principle of the preceding.

THE THISTLE FAMILY (*Carduaceae*)

2924. Inula. Elecampane.—The root of *Inula Helenium* L. Native of Europe and widely naturalized.
2925. Inulin ($C_6H_{10}O_5$).—A sugar-like constituent of the preceding and of many related plants.
2926. Helenin ($C_{15}H_{20}O_2$).—Another constituent of the same.
2927. Alantol. Inula camphor. ($C_{10}H_{16}O$).—An aromatic constituent of the same.
2928. Wormwood. Absinthium.—The herbage of *Artemisia Absinthium* L. Native of Asia and Europe and widely naturalized.
2929. The inflorescence of the preceding.
2930. Absinthiin. ($C_{40}H_{56}O_8+H_2O$).—The extremely bitter constituent of the preceding.
2931. Santonica. Levant wormseed.—The unexpanded flower-heads of *Artemisia pauciflora* (Ledeb.) Weber. Native of Turkestan.
2932. Santoninic acid ($C_{15}H_{20}O_4$).—An acid existing in the preceding.
2933. Crude santonin. Anhydrous santoninic acid ($C_{16}H_{18}O_3$).—The active anthelmintic constituent of the preceding, in its unrefined state.
2934. Santonic acid.—An acid isomeric with santoninic, and from the same plant.
2935. Carthamus, natural. (See No. 1320.)
2936. The same pressed into cakes.
2937. Carthamin. (See No. 1322.)
2938. Calendula. (See No. 1318.)
2939. Calendulin. (See No. 1319.)
2940. Camphor plant. Salt-marsh fleabane.—The herbage of *Pluchea camphorata* (L.)DC. Native of the coastal marshes of the American Atlantic.
2941. Borneol. Borneo camphor ($C_{10}H_{18}O$).—A camphor existing in the above and some related plants and usually obtained from *Dryobalanops*, of the family *Dipterocarpaceae*.
2942. Arnica root.—The rootstock and roots of *Arnica montana* L. Native of Europe.
2943. Arnica flowers.—The flower-heads of the same plant.
2944. Arnicin ($C_{20}H_{30}O_4$).—An amaroid existing in the preceding two.

2945. Groundsel. Birdseed. Chicken-weed.—The herbage of *Senecio vulgaris* L. Native of Europe and naturalized in many other countries.

2946. Senecionine ($C_{18}H_{26}NO_6$).—An alkaloid existing in the preceding.

2947. Fibrin. Gluten.—An albuminoid constituent of plants, of indefinite chemical composition.

Starches

Starch is manufactured by most plants, as a reserve food supply, from the water taken in through the roots and the carbonic acid gas inhaled from the atmosphere; the chemical combination being effected by the sun's energy, directed by the green coloring-matter (chlorophyl). It is mostly stored in the form of granules, sometimes in small rods, and is easily converted by the plant, or artificially, into glucose, in which form the plant consumes it. In darkness the plant consumes starch previously formed in daylight. Starch is insoluble in water and therefore can be easily washed out from ground plant tissues. The forms of the starch grains are so constant and characteristic in each plant that they often afford an excellent method of identifying the latter, even in powder.

2948. Warabi starch.—Extracted from the rootstock of *Pteris aquilina* L. (*Polypodiaceae*—Polypody Family). Native of the north temperate zone and of tropical mountains. From Japan.

2949. Coontie stem or "Rost."—The caudex of *Zamia floridana* DC. (*Cycadaceae*—Cycad Family). Native of Florida. Acquired at Miami, Florida, by J. K. Small.

2950. Coontie starch. Florida arrowroot starch.—A starch extracted from the preceding. Presented by A. B. Hurst, of Little River, Florida.

2951. Another specimen of the same from Little River, Florida. Presented by Miss Ruth N. Sulzer.

2952. Spent coontie root.—The refuse material after the removal of the starch from the preceding. Presented by A. B. Hurst, of Little River, Florida.

2953. Bay rush.—The caudex of *Zamia tenuis* Willd. Native of the Bahama Islands and used as a source of starch. Acquired by N. L. Britton.

2954. Wheat.—The grain of *Triticum vulgare* Vill. (*Gramineae*—Grass Family). Native of Europe and everywhere cultivated.

2955. Wheat starch.—The starch extracted from the preceding. Presented by the New York College of Pharmacy.

2956. Rye.—The grain of *Secale cereale* L. (Same family). Native of Asia and cultivated in all cool countries.

2957. Rye starch.—The preceding, in the powdered state, showing the starch grains.

2958. Oats.—The grain of *Avena sativa* L. (Same family). Native of Europe and Asia and cultivated in all cool countries.
2959. Oat starch.—The preceding in the powdered state, showing the starch grains.
2960. Barley.—The grain of *Hordeum vulgare* L. (Same family). Native of the Orient and cultivated in all countries.
2961. Barley starch.—The preceding in the powdered state, showing the starch grains.
2962. Rice.—The grain of *Oryza sativa* L. (Same family). Native of southern Asia and cultivated in all tropical and sub-tropical regions.
2963. Rice starch.—The starch extracted from the preceding.
2964. Maize. Indian corn.—The grain of *Zea Mays* L. (Same family). Native of tropical America and everywhere cultivated, except in cold regions.
2965. Corn starch.—The starch extracted from the preceding.
2966. Sago flour or starch.—The starch extracted from the stem of *Metroxylon Sagu* Rottb. (*Palmae*—Palm Family). Native of the East Indies and cultivated. Presented by Boustead and Company, of Singapore.
2967. Pearl sago.—A special form of the preceding. Presented by Francis H. Leggett & Company, of New York.
2968. Another form of the same. Same donor.
2969. Another sample of the same. Presented by Boustead and Company, of Singapore.
2970. Taro.—The corm of *Colocasia esculenta* (L.) Schott. (*Araceae*—Arum Family). Native of the East Indies and cultivated as a food in all tropical countries.
2971. Taro starch.—The preceding in the powdered state, showing the starch grains.
2972. Yams.—The tubers of *Dioscorea sativa* L. (*Dioscoreaceae*—Yam Family). Native of the East Indies and cultivated in all tropical regions.
2973. Yam starch.—The starch extracted from the preceding.
2974. Bananas.—The fruit of *Musa sapientum* L. (*Musaceae*—Banana Family). Native of tropical Asia and cultivated in all tropical countries.
2975. Plantains.—The fruits of *M. paradisiaca* L. Cultivated in all tropical countries.
2976. Banana meal.—An impure starch, made by grinding dried, unripe plantains. From Retreat, Jamaica.
2977. Another sample of the same, but from the banana.
2978. Curcuma, or tumeric.—The tuber of *Curcuma longa* L. (*Zingiberaceae*—Ginger family). Native of the East Indies and cultivated in all tropical countries.
2979. Curcuma starch.—The preceding in the powdered state, showing the starch grains.
2980. Clinogyne starch.—A starch extracted from the rootstock of *Clinogyne dichotoma* Salisb. (*Marantaceae*—Arrowroot family). Native of tropical Africa. From Liberia.
2981. Arrowroot. Maranta.—The rootstock of *Maranta arundinacea* L. (Same family). Native of the East Indies and cultivated in tropical regions.
2982. Picture of the arrowroot plant.
2983. Arrowroot starch.—The starch extracted from the preceding. From Great Valley, Jamaica. Acquired by N. L. Britton.

2984. The same, from Four Paths, Jamaica.
2985. Commerical sample of the same, presented by the New York College of Pharmacy.
2986. Dog-tooth violet starch.—The starch of the corm of *Erythronium Dens-canis*. (*Liliaceae*—Lily Family).
2987. Buckwheat.—The grain of *Fagopyrum Fagopyrum* (L.) Karst. (*Polygonaceae*—Knot-weed Family). Native of Europe and Asia and cultivated in all cool countries.
2988. Buckwheat starch.—The preceding in the powdered state, showing the starch grains.
2989. Oikara du Ainu.—The starch of the seed of *Pueraria Thunbergiana* Benth. (*Fabiaceae*—Pea Family). Native of eastern Asia. From the Field Museum of Natural History.
2990. Sweet cassava root.—The tuberous root of *Manihot palmata* (Vell.) Muell. Arg. (*Euphorbiaceae*—Spurge Family). Native of tropical South America and cultivated in all tropical countries.
2991. Bitter cassava root.—The tuberous root of *Manihot Manihot* (L.) Lyons. (Same family). Native of Brazil and cultivated in all warm countries.
2992. Medium flake tapioca.—A prepared starch obtained from the two preceding species. Presented by Boustead & Company, of Singapore.
2993. Another form of the same, presented by F. H. Leggett & Company, of New York.
2994. Another sample of the same, from the same donor.
2995. Small flake tapioca. Presented by Boustead & Company, of Singapore.
2996. Medium pearl tapioca.—A form of the same in small pellets. Same donor.
2997. Another sample of the same, presented by Francis H. Leggett & Company, of New York.
2998. Small pearl tapioca. Presented by Boustead & Company, of Singapore.
2999. Powdered tapioca. Presented by F. H. Leggett & Company, of New York.
3000. Tapioca flour. Presented by Boustead & Company, of Singapore.
3001. Tapioca starch from Retreat, Jamaica.
3002. The same from Trinityville, Jamaica.
3003. The same from Paraguay.
3004. An instrument used by tropical American natives in preparing tapioca. From Jamaica. Acquired by Samuel Henshaw.
3005. Cassava starch. From Montserrat, West Indies. Presented by S. A. Wuerke.
3006. Tapioca from the sweet cassava root. From Retreat, Jamaica.
3007. Tapioca from bitter cassava root. From Manchester, Guatemala.
3008. The same, from Great Valley, Jamaica.
3009. Cacao. (See No. 2268.)
3010. Cacao starch.—The preceding in a powdered state, showing its starch grains. From Retreat, Jamaica.
3011. Sweet potatoes.—The tuberous root of *Ipomoea Batatas* (L.) Lam. (*Convolvulaceae*—Morning-glory Family). From the New York market. Presented by H. H. Rusby.
3012. Sweet-potato starch.—The starch extracted from the preceding.
3013. Potatoes.—The tubers of *Solanum tuberosum* L. (*Solanaceae*—Potato Family). Native of tropical America and everywhere cultivated.

3014. Potato starch.—The starch extracted from the preceding.
3015. Another sample of the same. From the New York College of Pharmacy.
3016. Klow kow Nieu starch.—The starch of an undetermined plant of Siam.

Sugars

Sugars are formed by plants as a stage in the manufacture of carbohydrate nutrients, and again when the carbohydrate is used by the plant as food, as explained in our account of starch. Although many varieties of sugar are recognized, they all fall into two great classes, cane-sugar and glucose. Cane-sugar occurs mostly in stems and roots, glucose in fruits. Glucose is cheaper than cane-sugar and if pure, is more healthful for human use, but the commercial article is very apt to be impure. Glucose is mostly manufactured from corn. Cane-sugar is mostly manufactured from sugar-cane, sugar beets and sorghum cane.

3017. Pine sugar or manna.—A sugar that sometimes exudes naturally from the leaves of the great silver fir (*Abies grandis* Lindl.) (*Pinaceae*—Pine Family), a native of Montana, Oregon, and British Columbia. Presented by Franz Boas, in 1914.
3018. Picture of a sugar-cane plantation.
3019. Sugar-cane.—The stems of *Saccharum officinarum* L. (*Gramineae*—Grass Family). Native of eastern Asia and cultivated in all tropical and subtropical regions. Collected by J. K. Small in southern Florida in 1904. This is the principal source of cane sugar, which is obtained by squeezing out the juice by passing the cane between rollers, and evaporating it down by boiling, or by creating a vacuum in the container in which it is placed. When partly boiled down, so as to become a thick liquid, it is called molasses. After carrying the boiling as far as practicable, it is allowed to stand, when the sugar forms at the bottom and molasses rises to the top. The molasses is then poured off and the sugar is allowed to drain, the drainings being used as syrup. A further amount of syrup may be removed by the use of a centrifugal machine. The sugar so resulting is called "raw" or "unrefined" sugar and is valued according to the percentage of pure crystallizable sugar that it contains. Great quantities are consumed in this state, but for ordinary use, it is subjected to various methods and degrees of refining and decolorizing, and is graded and valued according to the degree to which such refining is carried.

Numbers 3020–3069 constitute a series of raw and refined sugars representing various standard grades. Unless otherwise specified, they were presented by the American Sugar Refining Company.

3020. Pinoche.—An unrefined cane sugar made and used in Mexico. Acquired at Torres, Sonora, Mexico, in 1902 by D. T. MacDougal.
3021. Guatemala muscovado.—Unrefined sugar produced in Guatemala.

3022. Cuban molasses sugar.—The sugar that settles to the bottom of the molasses. From Cuba.
3023. Centrifugal sugar.—Raw Cuban sugar, dried by the centrifugal machine.
3024. Raspaduro sugar.—Obtained by J. A. Shafer at Paso Estancia, Cuba, April, 1909.
3025. An inferior sample of the same from Holguin, Cuba. Same donor.
3026. Porto Rico centrifugal sugar.
3027. Jamaican musco or raw sugar.
3028. Santo Domingo molasses sugar.
3029. Santo Domingo concrete raw sugar.
3030. Santo Domingo musco or raw sugar.
3031. Santo Domingo centrifugal sugar.
3032. Barbadoes musco or raw sugar.
3033. Surinam molasses sugar.
3034. Surinam centrifugal sugar.
3035. Venezuelan centrifugal sugar.
3036. Brazilian musco sugar. From Rio Grande, Brazil.
3037. The same from Pernambuco, Brazil.
3038. Peruvian centrifugal sugar.
3039. Philippine sugar, No. 3, standard.—Partly refined sugar from Ilo Ilo, Philippine Islands.
3040. The same, No. 2, standard. A better grade.
3041. The same, No. 1, standard. A still better grade.
3042. Chinese musco or raw sugar.
3043. Sandwich Island sugar. No. 3, standard.
3044. The same, No. 2, standard.
3045. The same, No. 1, standard.
3046. Java centrifugal sugar.
3047. No. 14, standard sugar.
3048. " 12, " "
3049. " 10, " "
3050. " 8, " "
3051. " 6, " "
3052. Soft No. 5, standard refined sugar.
3053. " " 4, " " "
3054. " " 3 " " "
3055. " " 2 " " "
3056. " " 1 " " "
3057. Refined soft A sugar
3058. " " granulated sugar.
3059. " coarse " "
3060. " fine " "
3061. Nonpareil sugar pellets.—Made for covering the top of nonpareil chocolate drops.
3062. Cut-loaf refined sugar.
3063. Crystal domino sugar, half size.
3064. The same, full size.
3065. Cube-cut refined sugar.

3066. Crystal domino sugar in cake form, before being cut.
3067. Granulated crystal domino sugar.
3068. The same, powdered.
3069. " " confectioners powdered.
3070. Bone black or animal charcoal.—Used in the purification and decolorizing of refined sugar. Same donor.

Numbers 3071–3083 are various sugar products, from the same donors.

3071. Molasses.—The crude, partially evaporated juice of the sugar-cane.
3072. Cane syrup.—The drippings from wet sugar.
3073. Crystal domino syrup.—A fine, light-colored cane syrup.
3074. Rock candy.—Pure crystallized cane sugar.
3075. Rock-candy syrup.—Syrup made by dissolving the preceding.
3076. Simple syrup. Syrupus simplex.—Made by dissolving ordinary refined sugar in about half a part of water.
3077. Caramel.—Sugar that has been caused to part with $2H_2O$, that is, two molecules of water, by being heated to from 180° to 200° C.
3078. Dextrin.—The name applied to the series of intermediate products formed in the change of starch to glucose. Presented by E. Merck & Company, of New York.
3079. Coco-palm sugar.—Made by evaporation of the sap of the stem of the coconut palm. (See No. 441.) Acquired in Buitenzorg, Java, by Percy Wilson.
3080. Palm sugar.—Made by evaporating the sap of the stem of the sugar palm (*Arenga saccharifera* Labill., *Palmae*—Palm Family). Native of the East Indies and cultivated. Same source as last.
3081. Young sugar beets.—Partly grown roots of a cultivated form of *Beta vulgaris* L. (*Chenopodiaceae*—Goosefoot Family). Native of Europe and cultivated in cool countries. Grown by H. H. Rusby at Newark, New Jersey. Roots of full size would be inconvenient for exhibition.
3082. Beet sugar.—A low-grade European product. Made by evaporating the juice of the sugar beet. Beet sugar is identical in composition, properties, and uses with that obtained from sugar cane. The successful growth of the sugar beet is closely restricted to limited areas. The line of separation between favorable and unfavorable lands is very sharp and the causes for the difference are not understood. Presented by the American Sugar Refining Company, of New York.
3083. Another sample of the same, of better grade.
3084. Maple wax.—The sugar made by evaporating the sap of the stem of the sugar-maple tree (*Acer nigrum* Michx., and *A. saccharum* L.) (*Aceraceae*—Maple Family), native of northeastern North America. This sample is from *Acer nigrum* and was acquired at Pictou, Nova Scotia, 1904, and presented by C. B. Robinson.
3085. Portion of trunk of *Acer saccharum*, showing the method of drawing the sap.
3086. Leaves, flowers, and fruits of the same.
3087. Portion of stem of *Acer nigrum*.
3088. Leaves, flowers, and fruits of the same.

Numbers 3089–3098 represent maple sugar and syrup and were presented by the Vermont Maple Sugar Market, of Randolph, Vermont.

3089. Maple sugar from *Acer nigrum*.

3090. The same, in small cakes.
3091. Another form of the same.
3092. Soft maple sugar.—The sap partially boiled down.
3093. Maple syrup, grade A.
3094. " " " AA.
3095. " " extra AA., variously bottled.
3096. Commerical maple syrup. Presented by B. A. Bowker, of Bloomfield, Vermont.
3097. Refined, stirred dry maple sugar. Same donor.
3098. Commerical maple sugar, from Chilsom Lake, New York.

Numbers 3099–3104 represent manna, a saccharine exudation from incisions in the bark of the manna ash tree (*Fraxinus excelsior* L.). (*Oleaceae*—Olive Family), native of southern Europe and cultivated. Presented by Pietro Orlando, of Palermo, Italy, and New York City.

3099. Section of the stem of the tree.
3100. Twigs with leaves and fruits of the same.
3101. Large flake manna.—The best grade, consisting of large and clean masses.
3102. Small flake manna.—Consists of smaller fragments, removed after separation from the larger flakes.
3103. Manna in sorts.—The small fragments scraped off of the bark after the removal of the large and small flakes, and containing considerable impurity.
3104. Mannit.—The sugar resulting from the refining and purification of manna.

Fodders

The term "Fodder" is applied to herbage gathered for feeding to grazing animals, in either the fresh or dried state. It is often used also to include other foods than herbage fed to such animals, and to the herbage as eaten by them from the living plant, although it is more customary to call the latter forage or pasture.

THE GRASS FAMILY (*Gramineae*)

3105. Corn stalks.—The straw of Indian corn or maize, *Zea Mays* L. Native of tropical America and cultivated in all but cold countries. The leaves and husks are the parts chiefly eaten.
3106. Brown beard grass.—*Andropogon scoparius* Michx. Native of the northeastern United States.
3107. Sweet beard grass.—*Andropogon saccharoides* Sw. Native of temperate and tropical America.
3108. Forked beard grass.—*Andropogon furcatus* Muhl. Native of North America.
3109. Virginia beard grass.—*Andropogon virginicus* L. Native of the eastern United States.
3110. Slender Paspalum.—*Paspalum setaceum* Michx. Native of the eastern United States.

3111. Barbed panic grass.—*Panicum barbulatum* Michx. Native of the eastern United States.
3112. Agrostis-like panic grass.—*Panicum agrostoides* Muhl.
3113. Hispid panic grass.—*Panicum clandestinum* L. Native of the eastern United States.
3114. Bur grass.—*Cenchrus tribuloides* L. Native of eastern and central North America.
3115. Foxtail grass.—*Chaetochloa corrugata* (Ell.) Scribn. Native of the southeastern United States.
3116. Italian millet.—*Chaetochloa italica* (L.) Scribn. Native of Europe and naturalized in the United States.
3117. Another specimen of the same.
3118. Large-seeded foxtail grass.—*Chaetochloa macrosperma* Scribn. & Mer. Native of the southeastern United States.
3119. Vanilla grass.—Sweet-scented vernal grass. *Anthoxanthum odoratum* L. Native of Europe and naturalized in the United States.
3120. Canary grass.—*Phalaris canariensis* L. Native of Europe and naturalized in North America.
3121. Reed canary grass.—*Phalaris arundinacea* L. Native of North America.
3122. Purple Aristida.—*Aristida purpurascens* Poir. Native of the eastern and central United States.
3123. Poverty grass.—*Aristida dichotoma* Michx. Native of the southeastern United States.
3124. Erect Aristida.—*Aristida stricta* Michx. Native of the southeastern United States.
3125. Pinelands Muhlenbergia.—*Muhlenbergia trichopodes* (Ell.) Chapman. Native of the southeastern United States.
3126. Timothy or herds grass.—*Phleum pratense* L. Native of Europe and cultivated as one of the most important of hay plants.
3127. Red-top.—*Agrostis alba vulgaris*. Native of North America and cultivated.
3128. Stoloniferous bent grass.—*Agrostis stolonifera* L. Native of Europe and Asia.
3129. Agrostis sp.
3130. Langsdorf's reed grass.—*Calamagrostis phragmitoides* Hartm. Native of the north temperate zone.
3131. Long-leaved matweed.—*Ammophila longifolia* Vasey. Native of North America.
3132. Sea sand reed.—*Ammophila arenaria* (L.) Link. Native of eastern North America.
3133. Oat grass.—*Arrhenatherum elatum* (L.) Beauv. Native of Europe and naturalized in North America.
3134. Tufted hair grass.—*Deschampsia caespitosa* (L.) Beauv. Native of the northern hemisphere.
3135. Wavy hair grass.—*Deschampsia flexuosa* (L.) Trin. Native of the northern hemisphere.
3136. Black oats.—A cultivated variety of *Avena sativa* L. Native of Europe and everywhere cultivated.
3137. White banner oats.—Another variety of the same.

3138. Barren oats.—*Avena sterilis* L. Native of southern Europe and Asia.
3139. Gama grass. Mesquit grass.—*Bouteloua juncifolia* Lag. Native of the southwestern United States and Mexico.
3140. Beckmannia.—*Beckmannia erucaeformis* (L.) Host. Native of the north temperate zone.
3141. Wire grass. Crab grass. Crowfoot grass.—*Eleusine indica* (L.) Gaertn. Native of the Old World and a bad weed in the United States.
3142. Feather grass.—*Leptochloa mucronata* (Michx.) Kunth. Native of the United States.
3143. Purple Eragrostis.—*Eragrostis pectinacea* (Michx.) Steud. Native of the United States.
3144. Broad-leaved spike grass.—*Uniola latifolia* Michx. Native of the United States.
3145. Marsh spike grass.—*Distichlis spicata* (L.) Greene. Native of North America.
3146. Quaker grass.—*Briza media* L. Native of the north temperate zone.
3147. Orchard grass.—*Dactylis glomerata* L. Native of Europe and widely cultivated for hay.
3148. Dogstail grass.—*Cynosurus cristatus* L. Native of southern Europe and Asia.
3149. Northern spear grass.—*Poa nemoralis* L. Native of the northern hemisphere.
3150. Sheep's-cue grass.—*Festuca ovina* L. Native of the northern hemisphere.
3151. Meadow fescue grass.—*Festuca elatior* L. Native of Europe and naturalized in North America.
3152. Abyssinian brome grass.—*Bromus adoensis* Hochst. & Stard. Native of northern Africa.
3153. Upright chess or cheat.—*Bromus racemosus* L. Native of eastern North America.
3154. Field chess or cheat. *Bromus arvensis* L. Native of Europe and Asia.
3155. Hungarian brome grass.—*Bromus inermis* Leyss. Native of Europe and cultivated.
3156. Slender wheat grass.—*Agropyrum tenerum longifolium.*
3157. Western wheat grass.—*Agropyrum spicatum* (Pursh) Scrib. & Sm. Native of the western United States.
3158. Two-rowed barley.—A cultivated form of *Hordeum sativum* Juss. Native of Europe and cultivated everywhere.
3159. Dog's-tooth grass.—*Capriola Dactylon* (L.) Kuntze. Of world-wide distribution.
3160. Florida Chloris.—*Eustachys neglecta* Nash. Native of Florida.
3161. Drummond's Tridens.—*Tridens Drummondii* (Scribn. & Kearn.) Nash. Native of the southeastern United States.
3162. Large crab grass.—*Syntherisma sanguinale* (L.) Nash. Naturalized from Europe throughout most of North America.

THE SEDGE FAMILY (*Cyperaceae*)

Very few of the plants of this family are eaten by cattle and those only sparingly, in the absence of grasses.

3163. Tussock sedge.—*Carex stricta* Lam. Native of bogs in the United States.

3164. Clustered field sedge.—*Carex marcida* Boot.
3165. Carex crinita Lam. Native of northwestern North America.
3166. Great bulrush.—*Scirpus lacustris* L. Native of the north temperate zone.
3167. Chairmaker's rush.—*Scirpus americanus* Pers. Native of North America.

3167.1. Mast.—Acorns of various species of *Quercus* (*Fagaceae*—Beech Family). An important wild food for hogs and turkeys.
3167.2. Round-leaved willow.—The herbage of *Salix orbicularis* Anders. (*Salicaceae*—Willow Family). Native of North America. Eaten to some extent by cattle when fodder is scarce, in far northern regions. Collected at Kotzebue Sound, Alaska, by N. McCook, 1920.
3168. Broad-leaved dock.—*Rumex obtusifolius* L. (*Polygonaceae*—Knotweed Family). Native of Europe and a bad weed in the United States. Grown in some countries as a pasture plant for cattle.
3169. Lambs'-quarters. Pig-weed.—*Chenopodium album* L. (*Chenopodiaceae*—Goosefoot Family). A cosmopolitan weed. It is eaten greedily by stock, especially pigs, and is highly nutritious.
3170. Beets.—*Beta vulgaris* L. (See No. 3081.)
3171. Spreading salt-bush.—*Atriplex patula* L. (Same family). A widely distributed weed.
3172. Turnips.—*Brassica Napus* L. (*Cruciferae*—Mustard Family). Native of Europe and everywhere cultivated.
3173. Winter rape.—A variety of the preceding. Especially valued for pig feed. Grown by H. H. Rusby at Newark, New Jersey.
3174. The same in the dried state. Same source.

THE PEA FAMILY (*Fabaceae*)

3175. Canadian beggar-tick.—*Meibomia canadensis* (L.) Kuntze. Native of the eastern United States. Many other species of this genus yield excellent fodder.
3176. Common vetch.—*Vicia sativa* L. Native of Europe and cultivated. Naturalized in the United States. Grown by H. H. Rusby at Newark, New Jersey. Other species of the genus yield good fodders.
3177. The seeds of the preceding. Same source.
3178. Hairy vetch.—The herbage of *Vicia villosa* Roth. Same source.
3179. Red clover.—*Trifolium pratense* L. Native of Europe and largely cultivated as a cow fodder.
3180. White clover.—*Trifolium repens* L. Native of the north temperate zone.
3181. Hybrid clover.—*Trifolium hybridum* L. Native of eastern North America.
3182. Alfalfa. Lucerne. Medick.—*Medicago sativa* L. Native of Europe and one of the most extensively cultivated of fodders.
3183. Hairy bush clover.—*Lespedeza hirta* (L.) Ell. Native of eastern North America.
3184. Spurred butterfly pea.—*Bradburya virginiana* (L.) Kuntze. Native of the eastern United States.
3185. Pea vines.—*Pisum sativum* L. Native of Europe and everywhere cultivated. Grown by H. H. Rusby at Newark, New Jersey, 1919.
3186. Maple peas.—A variety of the preceding, used as a stock fodder. Presented by H. H. Rusby.

3187. Velvet bean.—*Mucuna utilis* Wall. Native of tropical America and widely cultivated. Collected by H. H. Rusby at Miami, Florida.
3188. Another specimen of the same. Same collection.
3189. Lion velvet bean.—Another variety of the same. Same collection.
3190. Jack bean. Chickasaw Lima bean.—*Canavali ensiformis* DC. Native of tropical America and cultivated. Same collection.

THE CACTUS FAMILY (*Cactaceae*)

The stems of most members of this family, often called "leaves" by careless persons, because of their broad and flattened forms, are soft and juicy, and serve as storage reservoirs for water during the rainy season, this water serving the plant during the long dry seasons of desert regions. This water-storage tissue is not only succulent and thirst-quenching, but is rich in nutritious matter, so that it has come to be used largely as fodder for domestic animals, and to some extent as food for man. The thorns and prickles which are thickly borne by most cactuses are highly objectionable, producing inflammation, often fatal, in the digestive organs of the animals. For this reason, the stems are usually roasted or singed in the flame before being fed. The discovery of varieties which were free from these irritating appendages has led to successful efforts to breed cultivated varieties of this sort. In this work Mr. Luther Burbank has been very active, and some of his varieties, here shown, are largely cultivated in the southwestern United States. These specimens were collected from plants growing in the conservatory of the New York Botanical Garden.

3191. Actual spineless cactus.
3192. Arbiter spineless cactus.
3193. Market spineless cactus.
3194. Melrose spineless cactus.
3195. Niagara spineless cactus.
3196. Opaline spineless cactus.
3197. Quillota spineless cactus.
3198. Robusta spineless cactus.
3199. Signal spineless cactus.
3200. Western mugwort.—The herbage of *Artemisia gnaphalodes* Nutt. (*Cardua-ceae*—Thistle Family). Native of northwestern North America. Occasionally eaten by stock when nothing better is obtainable.

FOODS

It is intended to exhibit in this collection specimens of all obtainable plants which contribute food or food-products for the use of man. In these cases will be found a number of articles that are also represented among the poisonous plants. In such cases the poisonous properties are due to the presence of certain constituents which it is possible to remove by cooking or other processes, leaving an edible and nutritious residue. As illustrations of this class, we

may cite the pleurisy root and tuckahoe, roots poisonous in their natural condition, but which were important foods among the aborigines, who destroyed the poisonous properties by prolonged baking. Some of the East Indian yams yield the deadly prussic acid, but may be prepared as foods by prolonged washing of the thinly sliced root, in running water. Tapioca also is made from a deadly poisonous root, rendered harmless by the process of extraction.

The number of vegetable foods is so very large that it has been found necessary to divide them into a number of groups, namely (1) roots and other underground portions, (2) herbage, stems and flowers, (3) fleshy or fresh fruits, (4) nuts and seeds used in the dried state, and (5) the cereal grains and products derived from them. The articles in each of these classes are then arranged in the natural sequence of the families of plants to which they belong.

Roots, Rootstocks, Tubers, and Bulbs

3201. Cat-tail roots.—The rootstock of *Typha angustifolia* L. (*Typhaceae*—Cat-tail Family). Native of North America and abundant in swamps. It was an emergency food of the aborigines. While not very palatable, it is capable of sustaining life. Collected by H. H. Rusby in the Arlington Marshes of New Jersey, February, 1906.

3202. Broad-leaved cat-tail roots.—The roots of *T. latifolia* L. Same region and use. Collected by J. A. Shafer in February, 1906, in the New York Botanical Garden.

3203. Arrow-head tubers.—The corms of *Sagittaria latifolia* Willd. (*Alismaceae*—Water Plantain Family). In swamps, United States and Canada. An important aboriginal food. Collected at Lancaster, Pennsylvania, October, 1906, by J. K. Small.

3204. Tule roots.—The bulbous stem-bases of *Scirpus occidentalis* (S. Watson) Chase (*Cyperaceae*—Sedge Family). Native of western North America. An important aboriginal food. Collected at Toledo, Oregon, in July, 1909, by H. H. Rusby.

3205. Chinese water-chestnut.—The corm of a species of *Eleocharis* (?). (Same family). Native of eastern Asia. An important Chinese food. From the New York market. Presented by H. H. Rusby.

3206. Chufa. Nut-grass. Rush-nut. Earth-nut.—The corms of *Cyperus esculentus* L. (Same family). Widely distributed. An important pig-food and also eaten by man.

3207. Calla. Water Arum.—The corms of *Calla palustris* L. (*Araceae*—Arum

Family). Native of the northern hemisphere. An aboriginal food. Collected at Little Moose Lake, New York, July 4, 1906, by H. H. Rusby.

3208. Taro. Indian kale.—The corm of *Colocasia Colocasia* (L.) Lyons. (Same family.) Native of the Orient and cultivated as a food in all tropical countries. Obtained in Porto Rico, August, 1902, by Percy Wilson.

3209. Another specimen of the same, obtained in Florida, by J. K. Small.

3210. Dasheen.—A cultivated variety of the preceding.

3211. Tuckahoe. Arrow-head.—The corms of *Peltandra virginica* (L.) Kunth. (Same family.) Native of the eastern United States, and very abundant in swamps. An important aboriginal food. Collected in the New York Botanical Garden by H. H. Rusby.

3212. Cluster-lily.—The bulbs of *Brodiaea capitata* Benth. (*Liliaceae*—Lily Family). Native of the Pacific region of the United States. An aboriginal food. From cultivated plants at the New York Botanical Garden.

3213. Quamash. Camassia.—The bulbs of *Quamassia Quamash* (Pursh) Coville. (Same family). Native of central and western North America. An important aboriginal food. Collected at Union, Oregon, June 5, 1905, by W. C. Cusick.

3214. Camassia bulbs.—A fine sample of the bulbs of the preceding.

3215. The bulbs of an undetermined plant, used as food by the Baniva Indians of the upper Rio Negro, Brazil. Collected by Weiss and Schmidt.

3216. Wild garlic.—The bulbs of *Allium vineale* L. Same family. Native of Europe and naturalized in the eastern United States. Used as onions by the aborigines. Collected at Franklin, New Jersey, June 1, 1906, by H. H. Rusby.

Numbers 3217–3220 are cultivated varieties of *Allium Cepa* L. Same family. Native of Europe. From the New York market. Presented by H. H. Rusby.

3217. Large white globe onion.

3218. Large yellow globe onion.

3219. Yellow Spanish onion.

3220. Wethersfield red onion.

3221. Pickled onions.—Young onions, pickled in vinegar. Presented by Francis H. Leggett & Company.

3222. Garlic.—The bulbs of *Allium sativum* L. Native of Europe and universally cultivated. From the New York market. Presented by H. H. Rusby.

3223. Pickled garlic.—The same pickled in vinegar.

3224. Leeks.—The bulbs of *Allium Porrum* L. Native of Europe and everywhere cultivated. From the New York market.

3225. Evaporated leeks.—The preceding bulbs, sliced and dried, so as to possess keeping qualities.

3226. Shallots.—The bulbs of *Allium Ascalonium* L. Native of Europe and cultivated. From the New York market.

3227. Chives.—The bulbs of *Allium Schaenoprasum* L. Native of Europe and cultivated.

3228. Wild American leek.—The bulb of *Allium tricoccum* Ait. Native of eastern North America. Eaten as leeks by the aborigines and settlers. Grown by H. H. Rusby at Newark, New Jersey.

3229. Erythronium bulbs.—The bulbs of *Erythronium americanum* Ker. (*Liliaceae*—Lily Family). Native of eastern North America. An aboriginal food.

3230. Bamboo-briar roots.—The tubers of *Smilax Beyrichii* Kunth. (*Smilaceae*—Sarsaparilla Family). Native of the southeastern United States. Used as a vegetable in soups by the North American Indians. Collected at Somerville, South Carolina, March 20, 1909, by H. H. Rusby.

3231. Smilax roots.—The root of a species of *Smilax* collected near Somerville, South Carolina, by H. H. Rusby. The soft inner portion is said to have been eaten in soups.

3231.1. Bomarea roots.—The roots of *Bomarea edulis* Herb. (*Amaryllidaceae*—*Amaryllis* Family). Native of tropical America.

3232. Yams.—The tuberous roots of *Dioscorea sativa* L. (*Dioscoreaceae*—Yam Family). Native of the East Indies and cultivated in all tropical regions. Acquired in the Jamaica market in 1900 by Samuel Henshaw.

3233. Another specimen of the same. Same source.

3234. Ube. Philippine yam root.—The edible root of *Dioscorea alata* L. (*Dioscoreaceae*—Yam Family). Native of the East Indies and cultivated in tropical regions. Grown in the Philippine Islands. Presented by E. B. Southwick.

3235. Fresh ginger.—The undried rootstock. (See No. 1396.)

3236. Candied ginger.—The preceding, peeled and boiled in sugar. From the New York market. Presented by H. H. Rusby.

3237. Chinese preserved ginger.—The fresh rootstock of *Alpinia officinarum* Hance, boiled and preserved in syrup. Native of China and cultivated. From the New York market. Same donor.

3238. Vilmorin sugar beet.—A cultivated form of *Beta vulgaris* L. (See No. 3081.) Presented by Martin Ball, Sparkhill, New York, October, 1906.

3239. Bassano beet.—Another variety of the same, closely related to the sugar beet. Grown by H. H. Rusby at Newark, New Jersey.

3240. Early blood-turnip beet.—Another variety of the same. Same source.

3241. Bitter root.—The root of *Lewisia rediviva* Pursh. (*Portulacaceae*—Portulaca Family). Native of the northwestern United States. An important aboriginal food. Collected at Union, Oregon, in April, 1890, by W. C. Cusick.

3242. Claytonia or spring beauty tubers.—The tubers of *Claytonia virginica* L. (Same family). Native of eastern North America. An aboriginal food.

3243. Chuguas.—The tubers of *Ullucus tuberosus* Lozan. (*Basellaceae*—Basella Family). Native of the South American Andes and cultivated. Acquired by H. H. Rusby in the market of Medellin, Colombia, August, 1917.

3244. Oyna.—The tubers of a species of *Basella* (*Basellaceae*—Basella Family). Native of tropical South America and cultivated. Acquired by J. N. Rose at Oroya, Peru, July, 1914.

3244.1. American Nelumbo tubers.—The edible, tuberous, thickened root-stocks of *Nelumbo lutea* (Willd.) Pers. (*Nymphaeaceae*—Water-lily Family). Native of the eastern and central United States. Grown in the New York Botanical Garden.

THE MUSTARD FAMILY (*Cruciferae*)

3245. Ruta Baga turnip.—A very large variety of *Brassica campestris* L. Native of Europe and cultivated in many forms. This variety is grown chiefly as a cattle food. From the New York market.

3246. Yellow Finland turnip.—Another cultivated variety of the same. Grown by Martin M. Ball at Sparkhill, New York.

3247. Flat purple-topped turnip.—Another cultivated variety of the same. From the New York market.

3248. Cowhorn turnip.—Another variety. Grown at Newark, New Jersey, by H. H. Rusby.

Numbers 3249–3255 are cultivated varieties of *Raphanus sativus* L. Native of Europe and everywhere cultivated.

3249. Long red or scarlet radish. Grown at Newark, New Jersey, by H. H. Rusby.

3250. Early red turnip radish. From the New York market. Same donor.

3251. White tip turnip radish. Presented by Mr. Lintott, of Newark, New Jersey.

3252. White China radish. From the Newark, New Jersey, market. Presented by H. H. Rusby.

3253. Black China radish. Same source.

3254. Large black turnip winter radish. Same source.

3255. Scarlet China radish. Grown at Bloomfield, New Jersey. Presented by H. H. Rusby.

3256. Horseradish. (See No. 1526.)

3257. Ground nut. Wild bean.—The tuberous root of *Glycine Apios* L. Native of the eastern United States. An excellent aboriginal food, said to have saved a Puritan colony from starvation in the early settlement period of this country. Collected at Bronx Park, New York, January 27, 1899, by W. N. Clute.

3258. Another sample of the same. Collected in the Dismal Swamp, Virginia, April 28, 1911, by Arthur Hollick.

3259. Oca.—The tubers of *Oxalis tuberosa* Molina. (*Oxalidaceae*—Wood-sorrel Family). Native of the Andean region and cultivated as a food. Acquired by R. S. Williams at La Paz, Bolivia, in 1902.

3260. Another specimen of the preceding. Obtained by H. H. Rusby in the market of Medillin, Colombia, August, 1917.

3261. Another specimen of the same, preserved in formaldehyde. Obtained at Oroya, Peru, by J. N. Rose.

3262. Masua.—The tubers of *Tropaeolum tuberosum* R. & P. (*Tropaeolaceae*—Nasturtium Family). Native and cultivated in the same region as the last. Same source.

3263. Sweet cassava root or yuca. (See No. 2990.) From the New York market.

3264. Another sample of the same, of large size. Same source.

3265. The same in the dried state.

3266. Cassava meal.—The same ground and dried and used in making cassava bread and for other purposes. From Retreat, Jamaica.

3267. Another sample of the same, from the same place.

3268. Sweet cassava meal from Spanish Town, Jamaica.
3269. The same from Great Valley, Jamaica.
3270. Another sample of the same from the West Indies.
3271. A sample obtained by H. H. Rusby at Bogota, Colombia, August, 1917.
3272. Camoting-cajoy.—Another sample of Manihot flour. From the Philippine Islands. Presented by E. B. Southwick.
3272.1. Medium pearl tapioca.—A form of the prepared starch of the same plant. Presented by Stein, Hall & Company, New York City.
3272.2. Small pearl tapioca.—Another form of the same, same donor.
3272.3. Tapioca flour.—The preceding, ground to a very fine powder. Same donor.
3273. Cassava bread made of the preceding. Obtained in Porto Rico, August 19, 1902, by Percy Wilson.
3274. Marsh-mallow root.—The root of *Althaea officinalis* L. (*Malvaceae*—Mallow Family). Native of Europe and cultivated. From the New York market.
3275. The same in a ground state. Same source.
3276. Prickly-pear tubers.—The tuberous roots of *Opuntia austrina* Small (*Cactaceae*—Cactus Family). Native of peninsular Florida. Collected by Miss Pearl D. Sulzner, December, 1912.
3277. Evening primrose roots.—The roots of *Oenothera biennis* L. (*Onagraceae*—Evening Primrose Family), collected at the end of the first season's growth. Native of eastern and central North America. An aboriginal food. Collected at Nutley, New Jersey, by H. H. Rusby.

THE CARROT FAMILY (*Ammiaceae*)

3278. Coues. Biscuit root.—The roots of *Lomatium Coues* (S. Wats.) Coulter & Rose. Native of the western United States. An important aboriginal food.
3279. Wild carrot.—The wild-grown root of the carrot, *Daucus Carota* L. Collected at the end of the first season's growth, in the New York Botanical Garden, September, 1918, by Percy Wilson.
3280. Oxheart carrot.—The root of a cultivated variety of the preceding. Grown on the trial grounds of Peter Henderson & Company, at Jersey City, New Jersey, and collected in August, 1899.
3281. Long orange carrot.—Another variety of the same. Same source.
3282. Yellow Chatenay carrot.—Another variety of the same. Grown at Newark, New Jersey, by H. H. Rusby.
3283. Hamburg parsley roots.—The tuberous root of *Apium Petroselinum* L. Native of Europe and cultivated for food and medicine. Grown on the trial grounds of Peter Henderson & Company.
3284. Celeriac. Celery root.—The tuberous root of celery, *Celeri graveolens* (L.) Britton. Native of Europe and cultivated as a food. Same source.
3285. Parsnip.—The root of a cultivated variety of *Pastinaca sativa* L. Native of Europe and Asia. Grown at Nutley, New Jersey, by H. H. Rusby.
3286. Evaporated parsnips.—The preceding, sliced and dried. Presented by F. H. Leggett & Company, of New York.

3287. Pleurisy root. Butterfly-weed root.—The tuberous root of *Asclepias tuberosa* L. (*Asclepiadaceae*—Milkweed Family). Native of eastern North America. An emergency food of the aborigines. Collected in Essex County, New Jersey, by H. H. Rusby.
3288. Sweet potato. Camote. (See No. 3011.)
3289. Common, white, or Irish potato. (See No. 3013.) From the New York market. Presented by H. H. Rusby.
3290. Chunya negra. Black chunya.—Potatoes frozen and then dried by a peculiar Bolivian process, after which they may be kept indefinitely. In this form the skin is retained. From the Bolivian exhibit at the Pan-American Exposition at Buffalo, 1901.
3291. Tunta dulce.—Another form of the same.
3292. Chunya of second quality.—The same as the preceding, but with the skin partly removed. Obtained in Bolivia by R. S. Williams in 1902.
3293. Chunya blanca, of first quality.—The same completely skinned and whitened. Same source.
3294. Another sample of the same, from the Buffalo Pan-American Exposition.
3295. Dried or evaporated potatoes. A commercial sample.
3296. Potato flour.—The preceding in a finely ground condition. Presented by F. Behrend, of New York.
3297. Another sample of the same.

THE CHICORY FAMILY (*Cichoriaceae*)

3298. Scolymus root. Spanish oyster plant. Golden thistle.—The root of *Scolymus hispanica* L. Native of the Mediterranean region and cultivated. Grown by H. H. Rusby at Newark, New Jersey.
3299. Oyster plant. Salsify.—The root of *Tragopogon porrifolius* L. Native of Europe and Asia and widely cultivated for food. Grown at Sparkhill, New York, in 1906, by Martin M. Ball.
3300. Another sample of the same.
3301. Chicory.—The root of *Cichorium Intybus* L. Native of Europe and cultivated for food and for use as an addition to coffee.
3302. The same in the dried state.
3303. The flowering chicory plant.

THE THISTLE FAMILY (*Carduaceae*)

3304. Dahlia roots.—The tuberous roots of various species of *Dahlia*. Native of tropical America and cultivated for ornament. The roots are said to be eaten by the natives of Mexico.
3305. Jerusalem artichokes.—The tuberous roots of *Helianthus tuberosus* L. Native of Europe and Asia and cultivated for food. Collected in Bronx Park in 1899 by Percy Wilson.
3306. Another specimen of the same. From the New York market.
3307. Burdock root.—The root of *Arctium Lappa* L., collected at the close of the first season's growth, at Newark, New Jersey, by H. H. Rusby.

Stems, Leaves, and Flowers

Algae or Seaweeds

3308. Chondrus. Irish moss. Carragheen.—The plants, *Chondrus crispus* (L.) Stackhouse and *Gigartina mammillosa* (Goodenough & Woodward) J. Ag. (*Gigartinaceae*). Native of the coasts of the Atlantic Ocean. From the New York market. Presented by Parke, Davis & Company.

3309. Japanese seaweed.—The plant-body of various species of *Porphyra*. (*Bangiaceae*). Native of the Pacific coast of Asia.

3310. Agar-agar.—A substance prepared from the herbage of various red seaweeds. Used as a food by the Orientals.

3311. Seatron (impregnated with citric acid).—The stalk of *Nereocystis priapus* S. G. Gmel. (*Laminariaceae*—Kelp Family). From the Pacific coast near Seattle, Washington, collected by T. C. Frye, September, 1911.

Fungi

3311.1. Mushrooms.—The fruit-body of *Agaricus campester* L. (*Agaricaceae* —Mushroom Family). Widely distributed in temperate regions and cultivated for food. Grown by C. Williamson, Sparkhill, New York.

3311.2. Shiitake.—The fruit-body of *Armillaria edodes* Berk. (*Agaricaceae*—Mushroom Family). Native on oaks in Japan. Presented by S. Kusano, 1910.

3311.3. Dried Boletus mushrooms.—The fruit-body of *Boletus edulis* Bull. (*Boletaceae*—Boletus Family). Native of Europe. From the New York market. Presented by H. H. Rusby.

3312.[31] Common morel.—*Morchella esculenta* Pers. (*Helvellaceae*—Helvella Family). Widely distributed, growing in thin woods, especially among pines.

3313. Pale-yellow Clavaria.—*Clavaria flava* Schaeff. (*Clavariaceae*—Clavaria Family). Native of woodlands, growing in warm, wet weather.

3314. Beefsteak mushroom.—*Fistulina hepatica* (Huds.) Fries. Growing on dead portions of tree-trunks.

3315.

THE BOLETUS FAMILY (*Boletaceae*)

3316. Edible Boletus.—*Ceriomyces crassus* Bolt. Native of temperate regions, where it is grown in open woodlands. Largely eaten in Europe, where it is sliced and dried for winter use.

3317. Rough-stemmed Boletus.—*C. scaber* (Bull.) Murrill. Same range as that of the preceding.

3317.1. Chestnut-colored Boletus.—*Gyroporus castaneus* (Bull.) Quél. Native of Europe and North America and found in sandy soil in the edges of woods.

3317.2. Granulated Boletus.—*Rostkovites granulatus* (L.) P. Karst. Growing in open sandy grounds, near trees of the pine family.

3317.3. Egg-yellow Boletus.—*Boletus luteus* L. Native of the eastern United States, growing in sandy woodlands.

[31] Numbers 3312–3317.24 are pictures of edible fungi, of which specimens cannot be satisfactorily preserved. For poisonous species, see Numbers 6316–6316.16.

3317.4. Edible Chanterel.—*Chanterel Chantarellus* (L.) Murrill. Native of temperate regions and growing commonly in dense evergreen thickets.

3317.5. Involute Paxillus.—*Paxillus involutus* (Batsch.) Fries. Widely distributed, growing in open ground or on dead logs.

3317.6. Masked Tricholoma.—*Lepista personata* (Fries) W. G. Sm. Growing in rich weedy or grassy grounds or in open woods.

3317.7. Oyster mushroom.—*Crepidopus ostreatus* (Jacq.) S. F. Gray. Native of Europe and America. Growing on dead trunks, especially of elm; also cultivated in Hungary.

3317.8 Common mushroom.—*Agaricus campester* L. Of almost world-wide distribution, growing in rich grassy land.

3317.9. Horse mushroom.—*A. arvensis* Schaeff. Growing in similar locations to those of the preceding.

3317.10. Early Pholiota.—*Pholiota candicans* (Bull.) Schroet. Native of temperate regions, growing in open grassy places.

3317.11. Shaggy-mane.—*Coprinus comatus* (Muell.) Fries. Native of temperate regions and growing in rich grassy or weedy soil.

3317.12. Common ink-cap.—*C. atramentarius* (Bull.) Fries. Growing in dense clusters on lawns and along roadsides in grassy places.

3317.13. Glistening ink-cap. *C. micaceus* (Bull.) Fries. Growing in dense clusters about stumps and dead trunks.

3317.14. Delicious Lactaria.—*Lactaria deliciosa* (L.) Fries. Native of the north temperate zone, growing in moist woodlands, especially among pines.

3317.15. Distant-gilled Lactaria.—*L. hygrophoroides* B. & C. Native of the eastern United States and growing in woods.

3317.16. Perplexing Hypholoma.—*Hypholoma perplexum* (Peck.) Sacc. Growing on stumps of deciduous trees.

3317.17. Appendiculate Hypholoma.—*H. appendiculatum* (Bull.) Quél. Widely distributed, growing on decaying wood.

3317.18. Pine-cone Boletus.—*Strobilomyces strobilaceus* (Scop.) Berk. (*Boletaceae* —Boletus Family). A black, shaggy species.

3317.19. Many-headed Clitocybe.—*Clitocybe multiceps* Peck. Native of a few localities in the United States, growing on lawns and in other grassy places.

3317.20. Field puffball.—*Lycoperdon cyathiforme* Bosc (*Lycoperdaceae*—Puffball Family). Abundant in meadows and pastures of the eastern United States.

3317.21. Honey agaric.—*Armillaria putrida* (Scop.) Murrill. A widely distributed species, growing on decaying wood.

3317.22. Fairy-ring mushroom.—*Marasmius oreades* (Bolt.) Fries. Growing in circles on lawns and in pastures in wet weather. May be mistaken for certain poisonous species.

3317.23. Mary's Russula.—*Russula Mariae* Peck. Native of the eastern United States, growing under oak trees.

3317.24. Yellow Russula.—*R. flava* Romell. Native of the northeastern United States, growing in woodlands.

Lichenes or Lichens

3318–3319.

3320. The thallus of a species of *Umbilicaria* (*Gyrophoraceae*—Rock-tripe Family), an edible lichen of Japan.

3321. Cetraria. Iceland moss.—The thallus of *Cetraria islandica* (L.) Acharius (*Parmeliaceae*). Native of cold and cool regions of the north temperate zone. From the New York market. Presented by Parke, Davis & Company.

Spermatophytes or Phanerogams

3322. Narrow-leaved cat-tail shoots.—The young stems of *Typha angustifolia.* (See No. 164.) An aboriginal food. Collected at Arlington, New Jersey, by H. H. Rusby, April 23, 1906.

3323. Broad-leaved cat-tail shoots.—The young stems of *T. latifolia.* (See No. 165). An aboriginal food. Collected by J. A. Shafer at Williamsbridge, New York, May 1, 1906.

3324. Tule shoots. Bullrush shoots.—The young stems of *Scirpus occidentalis* (S. Watson) Chase. Native of swamps of western North America. An aboriginal food. Collected at Toledo, Oregon, July, 1909, by H. H. Rusby.

3325–3327. The several portions of the heart or terminal (inner) bud of the trunk of the cabbage palmetto or palm, *Sabal Palmetto* (Walt.) R. & S. (*Palmae*—Palm Family). Native of the southeastern United States. It is eaten raw, like celery, or cooked, like cabbage. Acquired at Miami, Florida, by H. H. Rusby.

3328. Calamus buds.—The young inflorescence of *Acorus Calamus* L. (*Araceae*—Arum Family). Native of the north temperate zone. Collected by W. N. Clute at Bronx Park, New York, June, 20, 1899.

3329. Early salad. Bear-grass.—The young herbage of *Tradescantia montana* Shuttlw. (*Commelinaceae*—Commelina Family). Native of the southeastern United States. Collected by H. H. Rusby at Mount Airy, North Carolina, June 20, 1909, where it is used as a salad.

3330. French leek. Ollick.—The leaves of *Allium porrum* L. (*Liliaceae*—Lily Family). Native of Europe and cultivated. Grown by Martin Ball at Sparkhill, New York, October, 1906.

3331. Asparagus, Palmetto brand.—The young shoots of a cultivated variety of *Asparagas officinalis* L. (See No. 2448.) Presented by Howard Nichols, May, 1904.

3332. Another variety of the same. From the New York market. Presented by J. K. Small.

3333. Wild asparagus. Smilax shoots.—The young stems of *Smilax laurifolia* L. (*Smilaceae*—Sarsaparilla Family). Native of the southeastern United States and eaten by Indians and negroes. Collected by H. H. Rusby at Somerville, South Carolina, March 31, 1909.

3334. Beech buds.—The leaf-buds of *Fagus grandifolia* Ehrh. (*Fagaceae*—Beech Family). Eaten by Indians when on the war-path. Native of eastern North America. Collected by H. H. Rusby at Newark, New Jersey, May 1, 1906.

3335. Cow-tree milk.—The milk of the trunk of *Brosimum galactodendron* Don. (*Moraceae*—Mulberry Family). Native of northern South America. Said to be edible, like cow's milk. Presented by F. v. Wilmousky, of New York.

3336. The bark of the same tree.

3337. The leaves of the same.

THE KNOTWEED FAMILY (*Polygonaceae*)

3338. Curly dock. Narrow dock.—The leaves of *Rumex crispus* L. Native of Asia and Europe and a cosmopolitan weed. Widely eaten as a pot-herb. Collected by H. H. Rusby at Newark, New Jersey, May 1, 1906.

3339. Canaigre stems. Wild pie-plant.—The leaf-stems of *Rumex hymenosepalus* Torr. (See No. 1353.) Collected at Mesilla Park, New Mexico, in May, 1905, by E. O. Wooton.

3340. Acetosella. Red, sheep, field, or horse, sorrel. Sour-grass. Green sauce.—The herbage of *Rumex Acetosella* L. Native of Europe and somewhat cultivated. Used in salads. Collected by H. H. Rusby at Newark, New Jersey.

3341. Pie-plant. Garden rhubarb.—The leaf-stems of *Rheum rhaponticum* L. Native of eastern Europe and adjacent Asia and cultivated. From the New York market.

3342. The same from *Rheum undulatum* L., of western Asia.

3343. Another sample of the same.

THE GOOSEFOOT FAMILY (*Chenopodiaceae*)

3344. Glasswort. Saltwort. Pickle plant. Chicken's toes.—The herbage of *Salicornia europaea* L. Native of sea-coasts of the north temperate zone. Used in pickles and as a pot-herb. Collected on Hunters Island, New York, by M. A. Howe, August, 1906.

3345. Lambs'-quarters. Goose-foot. Pig-weed.—The herbage of *Chenopodium album* L. Native of Europe and a cosmopolitan weed. One of the most delicious of pot-herbs. Collected in Bronx Park by Percy Wilson, October, 1918.

3346. Western orache.—The herbage of *Atriplex occidentalis* Torr. Native of the western arid regions of the United States, and used by the natives as a pot-herb. Collected by H. H. Rusby at Adamana, Arizona, August, 1909.

3347. Saltbush.—The herbage of *A. Nuttalliana* S. Watson of the same region. Collected by H. H. Rusby at Albuquerque, New Mexico, in August, 1909.

3348. Beet tops. Beet leaves.—The young plants of *Beta vulgaris* L. Native of Europe and everywhere cultivated except in hot regions. A favorite pot-herb. Grown at Newark, New Jersey, by H. H. Rusby.

3349. Swiss chard.—The herbage of a cultivated variety of *Beta vulgaris*, commonly known as *B. Cycla*. From the New York market.

3350. Spinach. Spinage.—The herbage of *Spinacea oleracea* L. Native of Asia and cultivated in all except hot regions. From the New York market.

3351. New Zealand spinach.—The herbage of *Tetragonia expansa* Murray. (*Aizoaceae*—Carpet-weed Family). Native of Polynesia and cultivated. Grown at the New York Botanical Garden.

3352. Purslane. Pusley.—The herbage of *Portulaca oleracea* L. (*Portulacaceae*—Portulaca Family). Native of tropical America and widely introduced as a weed. Used as a pot-herb and a salad. Acquired by H. H. Rusby in the market of Queretaro, Mexico, in August, 1910.

3353. Another sample of the same.

THE MUSTARD FAMILY (*Cruciferae*)

3354. Winter cress. Bitter or rocket cress. Yellow rocket.—The herbage of *Barbarea Barbarea* (L.) MacMillan. Native of Europe and Asia and a cosmopolitan weed. Collected at Nutley, New Jersey, August 14, 1899, by H. H. Rusby.

3355. White kohl-rabi.—The thickened base of the stem and leaves of a cultivated variety of *Brassica oleracea* L. Native of Europe and cultivated in all cool regions. Presented by Dean Fenniss, of Peekskill, New York, June, 1899.

3356. Another sample of the same. From the New York market. Presented by H. H. Rusby.

3357. Early Wakefield cabbage.—The terminal bud or head of a cultivated form of the same plant. From the New York market. Same donor.

3358. Flat Dutch cabbage.—Another variety of the same. Same source.

3359. Savoy cabbage.—Another variety of the same. Grown at Newark, New Jersey, by H. H. Rusby.

3360. Red, or purple, cabbage.—Another variety, containing much red coloring matter. From the New York market. Same donor.

3360.1. Cabbage leaves in rolls, with salt as a preservative. From the Philippine Islands.

3361. Brussels sprouts.—The lateral buds of the stem of the same plant. Grown by Martin Ball, at Sparkhill, New York, October, 1906.

3362. Kale.—The herbage of *B. oleracea acephala* of the same species, developed under cultivation. From the New York market. Presented by H. H. Rusby.

3363. Georgia collards.—Another cultivated variety of the same plant, the leaves used as a pot-herb. Grown by H. H. Rusby at Newark, New Jersey.

3364. Cauliflower.—The inflorescence of the same plant, distorted by cultivation. Presented by James Green, May, 1904.

3365. The same, pickled. Presented by F. H. Leggett & Company, of New York.

3366. Chinese cabbage.—The young herbage of *Brassica chinensis* L. Native of China and cultivated. Grown by H. H. Rusby at Newark, New Jersey.

3367. The same, after developing a terminal bud or head. From the same source.

3368. The inflorescence of the same species. Same source.

3369. Young cactus stems. Nopal stems.—The young joints of the stem of *Nopalea cochenillifera* (L.) Salm-Dyck. (*Cactaceae*—Cactus Family). Native of tropical America. Cooked and eaten in Mexico, like egg-plant. Acquired in the market of Queretaro, Mexico, by H. H. Rusby.

3370. Melococha. Candied cactus stem.—The pulp of the stem of a cactus, probably *Opuntia Ficus-Indica* Miller, boiled in syrup and dried. (Same

family). Native of tropical America. Acquired by D. T. MacDougal at Tucson, Arizona, January, 1904.

3371. Cubierta.—The similarly prepared pulp of the stem of *Echinocactus Wislezeni* Englm. (Same family). Native of the southwestern United States. Same source and donor.

3372. Another sample, probably from the same plant. Acquired in San Luis Potosi, Mexico, by Edward Palmer.

3373. Preserved cactus pulp.—Identity of plant not known. Same source and donor as preceding.

3374. Fireweed stems.—The stems of *Chamaenirion latifolium* (L.) Small. (*Onagraceae*—Evening Primrose Family). Native of northwestern North America. The pith is used by the Indians in soup. Collected by H. H. Rusby near Glacier, Canada.

3375. Evening primrose.—The young herbage of *Oenothera biennis* L. (Same family). Native of eastern and central North America. Collected by H. H. Rusby at Newark, New Jersey.

THE CARROT FAMILY (*Ammiaceae*)

3376. Cow parsnip.—The leaf-stems of *Heracleum lanatum* Michx. Native of North America. They are eaten like celery stems. Collected in the New York Botanical Garden in September, 1918, by Percy Wilson.

3377. Fennel stems.—The leaf-stems of *Foeniculum Foeniculum* (L.) Karst. (See No. 1954.) Purchased in the New York market and presented by H. H. Rusby.

3378. Another sample of the same. Grown at Sparkhill, New York, by M. Ball.

3378.1. Satsuma.—The entire plant of *Deringa canadensis* (L.) Kuntze. It is a favorite pot-herb of the Japanese. Native of North America and Japan and cultivated. Collected by H. H. Rusby at Upper Montclair, New Jersey, June 13, 1920.

3379. Pseudocymopteris stems.—The leaf-stems of *Pseudocymopterus tenuifolius* (Gray) Rydberg. Native of the Rocky Mountain region. Eaten like celery. Collected at Williams, Arizona, by H. H. Rusby, September, 1909.

3380. Celery.—The leaf-stems of *Celeri graveolens* (L.) Britton. (See No. 1577.) From the New York market. Presented by H. H. Rusby.

3381. Golden self-blanching celery.—Another variety of celery.

3382. Parsley.—The herbage of *Apium Petroselinum* L. (See No. 1578.) Grown by H. H. Rusby at Newark, New Jersey, August 5, 1919.

3383. Fetticus. Corn salad. Lambs' lettuce.—The herbage of *Valerianella locusta* (L.) Bettke. (*Valerianaceae*—Valerian Family). Native of Europe and cultivated as a salad.

3384. Squash flowers and very young fruits.—The flowers and very young fruits of various cultivated varieties of squash. Used in salads in Mexico. Purchased in the market of Mexico City, by H. H. Rusby, November, 1896.

3385. Pumpkin flowers.—Used like the preceding.

THE CHICORY FAMILY (*Cichoriaceae*)

3386. Large-leaved chicory.—The young leaves of *Cichorium Intybus* L. (*Chichoriaceae*—Chicory Family). Used as a salad. From the New York market.

3387. Endive. Garden succory.—The leaves of *Cichorium Endivia* L. Native of Europe and Asia and cultivated as a salad. From the New York market. Presented by H. H. Rusby.

3388. The stems of the same. Purchased in the New York market by H. H. Rusby.

3389. Dandelion.—The leaves of *Leontodon Taraxacum* L. Native of Europe and a cosmopolitan weed. Also cultivated as a pot-herb and salad. Collected in The New York Botanical Garden.

3390. Boston head-lettuce.—The terminal bud of a cultivated variety of *Lactuca sativa* L. Native of Asia and widely cultivated as a salad. From the New York market.

3391. Romaine lettuce.—The leaves of the variety *Romana* of the same species.

3392. Burdock stems.—The young stems of *Arctium Lappa* L. (*Carduaceae*—Thistle Family). Native of Europe and a cosmopolitan weed. Sometimes cooked and eaten.

3393. Cardoon.—The stems of *Cynara cardunculus* L. Native of Europe and cultivated. Purchased in the New York market by H. H. Rusby.

3394. Globe artichoke.—The young unopened flower-head of *Cynara Scolymus* L. (Same family). Native of the Mediterannean region and widely cultivated as a food. From the New York market. Presented by H. H. Rusby.

Fleshy or Fresh Fruits

3395. Coontie fruit.—The fruit of *Zamia floridana* DC. (*Cycadaceae*—Cycad Family). Native of the southeastern United States. The pulp surrounding the seeds is said to be used in preserves. Collected at Miami, Florida, December, 1904, by J. K. Small.

3396. Another sample of the same.

3397. Seaside arrow-grass.—The fruits of *Triglochin maritima* L. (*Scheuchzeriaceae*—Arrow-grass Family). Native of sea-coasts and of some inland lakes and swamps of the north temperate zone. Collected at Oscoda, Michigan, August 23, 1906, by H. H. Rusby.

3398. Pray's hybrid sugar-corn.—A cultivated variety of *Zea Mays L.* (See No. 257.) From the trial grounds of Peter Henderson & Company, August 14, 1899.

3399. Country Gentleman sugar-corn.—Another variety of the same. Same donor.

3400. Sweet corn grown by the Baniva Indians, Rio Içano, upper Rio Negro, Brazil. Acquired by Weiss & Schmidt.

3401. Saw-palmetto berries.—The fruits of *Serenoa serrulata* (R. & S.) Hooker f. (See No. 391.) They are used for fattening hogs and poultry and are sometimes eaten by human beings.

3402. Preserved dates.—The fruit of *Phoenix dactylifera* L. (Same family). Native of the Orient and cultivated in tropical countries.

3403. Corozo menor.—The fruit of *Martinezia caryotaefolia* H. B. K. (*Palmae*—Palm Family). Native of tropical America and cultivated. Its pulp is eaten and a fine palm oil is extracted from it. Obtained by H. H. Rusby in the market of Medellin, Colombia, August, 1917.

3404. Corozo mayor.—The fruit of a species of *Acrocomia*, probably *A. sclerocarpa* Mart. (Same family). Native of tropical America. The pulp is eaten and a fine palm oil is extracted. Obtained by H. H. Rusby in the market of Medellin, Colombia, August, 1917.

3405. Pina annona. Carimana.—The fruit of *Monstera deliciosa* Liebm. (*Araceae*—Arum Family). Native of tropical America and cultivated in tropical regions and in greenhouses. Obtained at Zamora, Mexico, by H. H. Rusby, February, 1910.

3406. Another sample of the same.

3407. Mucha-mucha.—The fruit of *Montrichardia* sp. Native of northeastern South America. Collected in swamps along the lower Orinoco, in May, 1896, by H. H. Rusby. Used in a conserve by the natives.

THE PINEAPPLE FAMILY (*Bromeliaceae*)

3408. Picture of a field of pineapples. A cultivated variety of *Ananas Ananas* (L.) Lyons. Native of Brazil and cultivated in tropical and subtropical regions.

3409. Queen pineapple.—A choice variety of the preceding. Grown in Florida and purchased in the New York market by H. H. Rusby.

3410. Red Spanish pineapple.—Another variety of the same, specially valued for preserving. Same source.

3411. Sugar-loaf pineapple.—Another variety of the same. Same source.

3412. Canned pineapple.

3413. Pineapple sweetmeats.

3414. Pinguin.—The fruit of *Bromelia Pinguin* L. Native of the West Indies and cultivated. Obtained at Matanzas, Cuba, March, 1903, by N. L. Britton.

3415. The same from Zamora, Mexico. Obtained by H. H. Rusby, February, 1910.

3416. Pinuela.—The fruit of *Bromelia Karatas* L. Native of tropical America and cultivated. Purchased in the market of Bogota, Colombia, July, 1917, by H. H. Rusby.

THE BANANA FAMILY (*Musaceae*)

3417. Canary banana.—The fruit of *Musa Cavendishii* Lamb. Native of China and cultivated. Obtained in Bermuda by T. J. Harris, October, 1905.

3418. Apple banana. Platano manzano.—The fruit of a variety of *Musa sapientum* L. Native of the East Indies and cultivated. Obtained in the market of Port of Spain, Trinidad, by H. H. Rusby, May, 1896.

3419. Jack banana.—Another cultivated variety of the same. Collected in the conservatory of the New York Botanical Garden, October, 1905.

3420. Guinea rosa banana.—Another cultivated variety of the same. Obtained in the markets of Porto Rico, August, 1902, by Percy Wilson.

3421. Red banana.—The fruit of *M. sapientum rubrum*. Same source as preceding.

3422. Plantain. Turque. Adam's apple.—The fruit of *Musa paradisiaca* L. Native of the East Indies and cultivated. This fruit is generally eaten cooked, in the unripe state. Obtained in Jamaica, in 1900, by Samuel Henshaw.

3423. Another specimen of the same. Obtained in Porto Rico, August, 1902, by Percy Wilson.

3424. Banana meal.—Dried unripe bananas, ground into meal. Obtained at Retreat, Jamaica, by N. L. Britton.

3425. Another quality of the same.

3426. Banana flour.—The same, ground very fine. Obtained at Bogota, Colombia, in July, 1917, by H. H. Rusby.

THE MULBERRY FAMILY (*Moraceae*)

3427. Russian black mulberry.—The fruit of *Morus tatarica* L. Native of Russia and cultivated. Collected in the New York Botanical Garden, July, 1904.

3428. Fruiting branch of the same. Collected at Lamb Hill, New Jersey, July 20, 1909, by H. H. Rusby.

3429. European black mulberry.—The fruit of *Morus nigra* L. Native of Europe and cultivated. Acquired by H. H. Rusby at Redlands, California, August, 1909.

3430. American red mulberry.—The fruit of *Morus rubra* L. Native of the eastern and central United States and cultivated. Acquired at Franklin, New Jersey, June 24, 1906, by H. H. Rusby.

3431. Flowering branch of the same.

3432. White mulberry.—The fruit of *Morus alba* L. Native of China and cultivated. Collected in the New York Botanical Garden, July 3, 1904.

3433. A fruiting branch of the same. Collected by Rudolph Ringe at Jerome Avenue, New York, June 21, 1899.

3434. Mexican downy mulberry.—The fruit of *Morus mollis* Rusby. Native of southern Mexico. Discovered and collected by H. H. Rusby near Quicatlan, Mexico, July 14, 1910.

3435. White or green fig.—The fruit of a cultivated variety of *Ficus Carica* L. Native of western Asia and cultivated in all tropical and warm temperate regions. Obtained at Redlands, California, August 24, 1909.

3436. Yellow fig.—Another variety of the same. Collected in the conservatory of the New York Botanical Garden, September 12, 1906.

3437. Black or red fig.—Another cultivated variety of the same. Same source as 3425.

3438. Purple fig.—Another variety of the same. From the conservatory of the New York Botanical Garden, September 12, 1906.

3439. Preserved figs.—Figs cooked in syrup. Presented by F. H. Leggett & Company, of New York City.

3440. Pressed figs.—Ripe figs, dried and pressed in cakes in Syria. From the New York market. Presented by H. H. Rusby.

3441. Pulled figs.—Ripe figs, dried after being softened by a pulling process. Same source.

3441.1. Greek dried figs. Same source.

3441.2. California black figs. Same source.

3442. Breadfruit.—The fruit of *Artocarpus incisa* L.f. Native of the East Indies and cultivated in all tropical countries. Collected in Porto Rico, August, 1902, by Percy Wilson.

3443. Javanese breadfruit.—The fruit of *Artocarpus Camansi* Blanco. Native of the East Indies and cultivated. Acquired on St. Kitts Island, West Indies, by N. L. Britton, September, 1901.

3444. Polyphemus bread fruit.—The fruit of *Artocarpus polyphemus* Pers. Native of the East Indies and cultivated. Obtained on Singkep Island, June, 1901, by Percy Wilson.

3445. Another variety of the same. Same source.

3446. Jack-fruit.—The fruit of *Artocarpus integrifolius* L.f. Native of the East Indies and cultivated.

3447. Seaside grape.—The fruit of *Coccolobis uvifera* (L.) Jacq. (*Polygonaceae*—Knotweed Family). Native of the Atlantic seashores of tropical America.

3448. Another sample of the same.

3449. Oregon grape.—The fruit of *Odostemon nervosum* (Pursh) Rydberg. (*Berberidaceae*—Barberry Family). Native of the northwestern United States and adjacent Canada. Collected at Toledo, Oregon, by H. H. Rusby, July, 1909.

3450. Barberry.—The fruit of *Berberis vulgaris* L. (Same family). Native of the north temperate zone and cultivated. Grown in the New York Botanical Garden.

3451. Mandrake. May-apple.—The fruit of *Podophyllum peltatum* L. (Same family). Native of eastern and central North America. Collected at Carnot, Pennsylvania, by F. F. Shafer, August 27, 1906.

THE CUSTARD APPLE FAMILY (*Annonaceae*)

3452. Picture of the paw-paw tree.—*Asimina triloba* (L.) Duval. Native of the eastern and central United States.

3453. Early paw-paws.—The fruits of a variety of the preceding. From W. H. Rudder, Salem, Indiana.

3454. Paw-paws from Greencastle, Indiana, presented by M. T. Cook, August 27, 1900.

3455. Unripe paw-paws.—Used for pies, pickles, and preserves.

3456. Sour-sop.—The fruit of *Annona muricata* L. Native of tropical America and cultivated. Collected at Porto Rico, by Mr. and Mrs. A. A. Heller, in 1899.

3457. Another sample of the same. Acquired by Weiss and Schmidt on the upper Rio Negro, Brazil, 1907–08.

3458. The same, cut to show the inner structure.

3459. A small-fruited variety of the same. Acquired at Sacupana, Venezuela, May, 1896, by H. H. Rusby.

3460. Sweet-sop. Sugar apple.—The fruit of *Annona squamosa* L. Native of the East Indies and cultivated in tropical countries. Acquired in the New York market, by H. H. Rusby.

3461. Another sample of the same.—Collected by H. H. Rusby in the upper Magdalena River Valley, Colombia, near the Soldanyo River, August, 1917.

3462. Cherimolla. Cherimoyer.—The fruit of *Annona Cherimolia* Mill. Native of Peru and cultivated in tropical regions. Acquired by H. H. Rusby in Mexico.

3463. Another form of the same. Same source.

3464. A picture of the same fruit.

3465. Custard apple. Sugar apple. Bullock's heart.—The fruit of *Annona reticulata* L. Native of the West Indies and cultivated. Acquired in Mexico City in 1910, by H. H. Rusby.

3466. Another specimen of the same.

3467. Florida sugar apple.—The fruit of *Annona glabra* L. Native of the southeastern United States and the West Indies. Obtained by N. L. Britton at Eight-mile Ranch, Great Bahama.

3468. Another specimen of the same, from Miami, Florida. Collected by H. H. Rusby, July, 1918.

3469. Another sample of the same. Acquired at Green Island, Jamaica, in March, 1908, by Britton and Hollick.

3470. Annona del Monte.—The fruit of *Annona testudinea* Safford. Collected in Honduras by Percy Wilson.

3471. Avocado. Aguacata. Alligator pear.—The fruit of *Persea Persea* (L.) Cockerell. (*Lauraceae*—Laurel Family). Native of tropical America and cultivated. A small-fruited form acquired by H. H. Rusby in the market of Queretaro, Mexico, August, 1908.

3472. A large purple-fruited form of the same. Acquired in the market of Mexico City, by H. H. Rusby, November, 1896.

3473. A medium-sized purple fruit of the same. Same source.

3474. Another sample of the same. Acquired by P. Wilson in Porto Rico, August, 1902.

3475. A round green form of the same. Acquired in the New York market by H. H. Rusby.

3476. A long green form of the same. Same source.

3477. Steriphoma fruit.—The fruit of *Steriphoma elliptica* Spreng. (*Capparidaceae*—Caper Family). Native of Venezuela and Trinidad. Acquired by H. H. Rusby at the Trinidad Botanic Garden, May, 1896.

3478. The fruit of an undetermined species in the same family. Same source.

THE GOOSEBERRY FAMILY (*Grossulariaceae*)

3479. Wild red currant.—The fruit of *Ribes triste* Pall. Native of the eastern United States. Collected by Ray Knight at Marlboro, New Hampshire, July 23, 1919.

3480. Fay's prolific red currant.—A cultivated form of *Ribes rubrum* L. Native of Europe and cultivated. Grown and presented by J. A. Staples, of Marlboro, New York, January 28, 1900.

3481. Another cultivated variety of red currant. Same donor.

3482. Le Versailles red currant. Another variety. Same donor.
3483. Red cherry currant. Same donor.
3484. Red currant jam. Presented by F. H. Leggett & Company, of New York.
3485. Red currant preserve. Same donor.
3486. White currant.—An albino variety of the same species.
3487. Wild Mexican currant.—The fruit of *Ribes Pringlei* Rose. Native of central Mexico. Collected by H. H. Rusby at Ajusco, Federal District, Mexico, July 19, 1910,
3488. Fetid currant.—The fruit of *Ribes prostratum* L'Hér. Native of eastern North America. Collected by H. H. Rusby at Little Moose Lake, New York, July 5, 1906.
3489. Skunk berry. Stink berry.—The fruit of *Ribes laxiflorum* Pursh. Native of northwestern North America. Collected by H. H. Rusby at Toledo, Oregon, July 1, 1909.
3490. Nevada black currant.—The fruit of *Ribes nevadense* Kellogg. Native of the southwestern United States. Collected by H. H. Rusby in the San Bernardino Mountains, California, August 14, 1915.
3491. European black currant.—The fruit of *Ribes nigrum* L. Native of Europe and cultivated. From the New York Botanical Garden, July 14, 1904.
3492. Oregon gooseberry.—The fruit of *Grossularia nivea* (Lindl.) Spach. Native of the northwestern United States. Collected by H. H. Rusby at Toledo, Oregon, July, 1909.
3493. Arizona gooseberry.—The fruit of *G. pinetorum* (Greene) Britton & Coville. Native of the southwestern United States. Sweet and delicious. Collected by H. H. Rusby on Bill Williams Mountain, Arizona, August, 1909.
3494. Eastern wild gooseberry.—The fruit of *G. rotundifolium* (Michx.) Coville & Britton. Native of eastern North America.
3495. Common cultivated gooseberry.—The fruit of *G. Uva-crispa* L. Native of Europe and cultivated in many varieties.
3496. Large-fruited gooseberry.—The fruit of *G. Grossularia reclinata.* Same source.
3497. Charles Downing gooseberry.—A choice cultivated form of the same. Grown and presented by James A. Staples of Marlboro, New York.
3498. Gooseberry jam.—Presented by F. H. Leggett & Company, of New York.
3499. Preserved gooseberries. Same donor.
3500. Prickly gooseberry.—The fruit of *G. Cynosbati* (L.) Mill. Native of eastern and central North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 12, 1919.
3501. A flowering branch of the same.
3502. Eastern wild gooseberry.—The fruit of *G. hirtella* Spach. Native of the eastern United States.

THE ROSE FAMILY (*Rosaceae*)

3503. Newfoundland strawberry.—The fruit of *Fragaria terrae-novae* Rydberg. Native of northeastern North America. Collected at Little Moose Lake, New York, by H. H. Rusby, July 5, 1906.
3504. Wild Canada strawberry.—The fruit of *Fragaria canadensis* Michx. Native of eastern North America. Collected by Ray Knight at Marlboro, New Hampshire, 1919.

3505. Virginia wild strawberry.—The fruit of *Fragaria virginiana* Duchesne. Native of eastern North America. Collected in Bronx Park, New York, by P. Wilson, June 10, 1899.

3506. Another specimen of the same. Collected in the New York Botanical Garden by W. N. Clute, June 27, 1899.

3507. Another specimen of the same. Collected by Ray Knight at Marlboro, New Hampshire, 1919.

3508. A flowering plant of the same.

3509. Wood strawberry.—The fruit of *Fragaria americana* (Porter) Britton. Native of the eastern United States.

3510. White wood strawberry.—A white-fruited variety of the same. Native of the same region. Collected in the New York Botanical Garden.

3511. Mexican strawberry.—The fruit of *Fragaria mexicana* Schl. Native of Mexico, and cultivated. Acquired by H. H. Rusby in the market of Mexico City, November, 1896.

3512. Gandy strawberry.—A cultivated variety, believed to be derived from *Fragaria virginiana.* Presented by J. A. Staples, of Marlborough, New York, June 28, 1900.

3512.1. Another sample grown by H. H. Rusby at Newark, New Jersey, June 14, 1920.

3512.2. Extra-early Jersey strawberry.—Same source as the preceding.

3513. Marshall strawberry.—A cultivated variety believed to be derived from *Fragaria chiloensis* Duchesne. Grown at Peekskill, New York, and presented by John Dikeman.

3514. Colombian wild strawberry.—The fruit of a species of *Fragaria.* Acquired in the market of Bogota, Colombia, by H. H. Rusby, August, 1917.

3515. Southwestern thimble-berry.—The fruit of *Rubacer tomentosum* Rydberg. Native of the Pacific coast region of North America. Collected by H. H. Rusby in the San Bernardino Mountains, July, 1909.

3516. Eastern thimble-berry.—The fruit of *Rubacer odoratum* (L.) Rydberg. Native of eastern and central North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 24, 1919.

3517. Large-flowered blackberry.—The fruit of *Rubus macropetalus* Dougl. Native of the northwestern United States and adjacent Canada. Collected by H. H. Rusby at Toledo, Oregon, July, 1909.

3518. Cut-leaved blackberry.—The fruit of *Rubus laciniatus* Willd. Native of western North America. Same collection as the preceding.

3519. Tall blackberry.—The fruit of *Rubus Andrewsianus* Blanchard. Native of northwestern North America. Collected by P. A. Rydberg, at Yonkers, New York, July 25, 1906.

3520. Sand blackberry.—The fruit of *Rubus cuneifolius* Pursh. Native of sandy regions of the southeastern United States. Fruit very tender and sweet.

3521. Alleghany blackberry.—The fruit of *Rubus alleghaniensis* Porter. Native of the northern Alleghany region. Collected by H. H. Rusby, at Marlboro, New Hampshire, September, 1919.

3522. A flowering specimen of the same. Collected by R. S. Williams in the New York Botanical Garden, June 4, 1919.

3523. High-bush blackberry.—The fruit of *Rubus argutus* Link. Native of the eastern United States. Collected by H. H. Rusby, at Mount Airy, North Carolina.

3524. Another specimen of the same. Collected by P. A. Rydberg at Alpine, New Jersey, July 26, 1906.

3525. A flowering specimen of the same. Collected by R. S. Williams in the New York Botanical Garden, June, 1919.

3526. Clustered blackberry.—A flowering specimen of *R. frondosus* Bigel. Native of eastern and central North America. Collected by John Uri Lloyd in Boone County, Kentucky, May 19, 1919.

3527. A fruiting specimen of the same. Same locality and collector, August 19, 1919.

3528. Another fruiting specimen of the same. Collected by R. M. Harper, at Tuscaloosa, Alabama, July 11, 1919.

3529. The fruit of *Rubus pergratus* Blanchard. Native of northeastern North America. Collected at Marlboro, New Hampshire, September 1, 1919.

3530. Another specimen of the same. Same collection as the last.

3531. Canadian blackberry.—The fruit of *R. canadensis* L. Native of eastern and central North America. Collected by P. A. Rydberg at Farmerville, New York.

3532. Another sample of the same. Collected by H. H. Rusby at Marlboro, New Hampshire, September 1, 1919.

3533. Plaited-leaved blackberry.—The fruit of *Rubus plicatifolius* Blanchard. Native of the eastern United States. Collected by P. A. Rydberg at Alpine, New Jersey.

3534. Common dewberry.—The fruit of *Rubus procumbens* Muhl. Native of the eastern and central United States. Collected in Bronx Park, by W. N. Clute, August, 1900.

3535. Another specimen of the same. Collected by P. A. Rydberg at Alpine, New Jersey.

3535.1. Another sample. Collected by H. H. Rusby at Sea Girt, New Jersey, July 27, 1920.

3536. Running blackberry.—The fruit of *Rubus Enslenii* Tratt. Native from Massachusetts south and west to Texas. Collected by H. H. Rusby at Mount Airy, North Carolina, June 18, 1909.

3536.1. Another specimen of the same. Collected by H. H. Rusby at Sea Girt, New Jersey, July 27, 1919.

3537. Bearded running blackberry.—The fruit of *Rubus setosus* Bigel. Native of the northeastern United States. Collected by H. H. Rusby, at Marlboro, New Hampshire, September 1, 1919.

3538. Bristly running blackberry.—The fruit of *Rubus hispidus* L. Native of damp woods of eastern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, September 1, 1919.

3539. Another sample from the same place.

3540. Mexican blackberry.—The fruit of *Rubus* sp. Native of Central Mexico. Acquired by H. H. Rusby on the summit of the mountains above Cuernavaca, Mexico.

3541. Mora Castilla.—The fruits of *Rubus* sp. Native of the high mountains of southern Colombia. Collected by H. H. Rusby near Balsillas, Colombia, July, 1917.

3542. The same, purchased in the market of Bogota, Colombia. An important commercial fruit.

3543. Mora India.—The fruit of *Rubus* sp. Native of the same region. Not regarded by the natives as being edible. Collected by H. H. Rusby at Balsillas, Colombia, July, 1917.

3544. Another specimen of the same. Same source and collector.

3545. Colombian mountain blackberry.—The fruit of *Rubus* sp. Same nativity and source as the last.

3546. Blackberry jam. Presented by F. H. Leggett & Company, of New York City.

3546.1. Baked-apple berry.—The fruiting twigs of *Rubus Chamaemorus* L. Native of arctic or far northern regions. Collected at Kotzebue Sound, Alaska, by N. McCook, 1920.

3546.2. Star raspberry.—The flowering branches of *Rubus stellatus* Smith. Native of northwestern North America. Collected at Kotzebue Sound, Alaska, by N. McCook, 1920.

3547. Dwarf raspberry.—The fruit of *Rubus pubescens* Raf. Native of northern North America. Collected by H. H. Rusby at Little Moose Lake, New York, July 6, 1906.

3548. Showy raspberry. Salmon-berry.—The fruit of the yellow-fruited form of *Rubus spectabilis* Pursh. Native of the northwestern United States. Collected by H. H. Rusby at Sielitz, Oregon, July, 1909.

3549. Black-cap.—The fruit of *Rubus occidentalis* L. Native of eastern and central North America. Collected by P. Wilson in Bronx Park, New York City, June 21, 1899.

3550. Another sample of the same.

3551. Southwestern black-cap.—The fruit of *Rubus bernardinus* (Greene) Rydberg. Native of the southwestern United States. Collected in the San Bernardino Mountains by H. H. Rusby, August, 1909.

3552. Dwarf raspberry.—The fruit of *R. americanus* (Pers.) Britton. Collected by H. H. Rusby at Little Moose Lake, New York, July 6, 1906.

3553. European or garden red raspberry.—The fruit of *Rubus idaeus* L. Native of Europe and Asia and cultivated. Grown at Newark, New Jersey, by H. H. Rusby.

3554. Another specimen of the same. Grown by James Staples, at Marlboro, New York, June 28, 1900.

3555. Raspberry jam made from the same. Presented by F. H. Leggett & Company, of New York City.

3556. Preserved European red raspberries. Same donor as last.

3557. Purplish-red raspberry.—The fruit of *R. neglectus* Peck, a natural hybrid between *Rubus idaeus* and *R. occidentalis* L. Native of the eastern United States. Collected by J. S. Hyde at Milton, New Jersey, July, 1905.

3558. Wild raspberry.—The fruit of *Rubus strigosus* Michx. Native of northern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 23, 1919.

3559. The same, with white fruit. Same collection as preceding.

3560. Japanese wine-berry.—The fruit of *Rubus phoenicolasius* Maxim. Native of Japan and cultivated. Collected in the New York Botanical Garden, July 20, 1906.

3561. Another sample of the same. Collected by H. H. Rusby in a garden at Montclair, New Jersey, 1919.

3562. Loganberry.—An accidental hybrid between a species of raspberry and one of blackberry. Originated in Oregon and widely cultivated. Grown by H. H. Rusby at Newark, New Jersey, 1919.

THE APPLE FAMILY (*Malaceae*)

3563. Western serviceberry.—The fruit of *Amelanchier florida* Lindl. Native of western North America. Collected by M. C. Cusick at Union, Oregon, July, 1906.

3564. Eastern serviceberry.—The fruit of *Amelanchier canadensis* (L.) Medic. Native of eastern and central North America. Collected by H. H. Rusby at Little Moose Lake, New York, July 6, 1906.

3565. Another sample of the same. Collected by Ray Knight at Marlboro, New Hampshire, July 20, 1919.

3566. Swamp serviceberry.—The fruit of *Amelanchier Botryapium* (L. f.) DC. Native of the northeastern United States. Collected in the New York Botanical Garden by W. N. Clute, June 27, 1899.

3567. Pemmican.—A food prepared by grinding serviceberries with meat and preserved by keeping it frozen. Presented by the New York College of Pharmacy.

3568–3584. Cultivated varieties of apple, the fruit of *Malus Malus* (L.) Britton. Native of Asia and one of the leading cultivated fruits of the world. Unless otherwise specified, they were grown and presented by J. A. Staples, of Marlboro, New York.

3568. Hubbardston nonesuch apple.

3569. King of Tompkins County, or King apple.

3570. Greening apple.

3571. Baldwin apple.

3572. Canada Baldwin apple.

3573. Northern spy apple.

3574. Bellflower apple.

3575. Jonathan apple.

3576. Borkin apple.

3577. Lady sweet apple.

3578. Champion quince apple.

3579. Fameuse apple.

3580. Arkansas apple.

3581. Fall pippin apple.

3582. Russet apple.

3583. Puppy-nose or sheep-nose apple.

3584. Lady apple.

3585. Manzanas Panochieros. Panochieros apple.—A variety developed and grown in Mexico. Obtained in the City of Mexico in November, 1896, by H. H. Rusby.

3586. Siberian crabapple. Hybrid crabapple.—A probable hybrid between the preceding and *M. baccata* (L.) Borck. Presented by Miss Dorothy Coker.

3587. Soulard crabapple.—The fruit of *Malus Soulardi* (Bailey) Britton. Regarded as a hybrid between *M. Malus* and the following. Native of the central United States. Collected in the New York Botanical Garden, September 12, 1906.

3588. Western crabapple.—The fruit of *Malus ioensis* (Wood) Britton. Native of the western United States. Collected by H. H. Rusby at Horn Brook, California, August, 1909.

3589. Wild apple.—A flowering branch of *Malus glaucescens* Rehder. Native of the central United States. Collected by John Uri Lloyd in Kenton County, Kentucky, May 4, 1919.

3590. Narrow-leaved crabapple.—The fruit of *Malus angustifolia* (Ait.) Michx. Native of the central United States. Collected at Carnot, Pennsylvania, by J. A. Shafer, August 3, 1906.

3591. Fragrant crabapple.—The fruit of *Malus coronaria* (L.) Mill. Native of eastern North America and cultivated. Collected in the New York Botanical Garden.

3592. Another cultivated variety of crabapple.

3592.1. Flowers of the preceding.

Numbers 3593–3605 are cultivated varieties of the pear, *Pyrus communis* L. Native of Europe and Asia and cultivated in all temperate and subtropical regions. Grown and presented by James A. Staples, of Marlboro, New York, with the exception of No. 593.

3593. Mexican pear.—A variety developed and grown in central Mexico. Obtained by H. H. Rusby in the market of Mexico City, November, 1896.

3594. Louis Bonne de Jersey pear.

3595. Vicar of Wakefield pear.

3596. Seckel pear.

3597. Beurre de Capiaumont pear.

3598. Buffon pear.

3599. Duchess L'Angouleme pear.

3600. Gray Doyenne or Beurre Rouge pear.

3601. Clerigeau pear.

3602. Lawrence pear.

3603. Sheldon pear.

3604. William or Bartlett pear.

3605. Kieffer pear.

3606. Preserved pears. Presented by F. H. Leggett & Company, of New York.

3607. Canned pears. Presented by Mrs. H. H. Rusby, of Newark, New Jersey.

3608. Chinese sand pear.—The fruit of *Pyrus sinensis* Lindl. Native of eastern Asia and cultivated. Grown and presented by J. A. Staples, of Marlboro, New York.

3609. Japanese quince. Spice apple.—The fruit of *Cydonia japonica* (Thunb.) Pers. Native of Japan and cultivated. Grown in the New York Botanical Garden. Usually grown for ornament, but a preserve is made of the fruit.

3610. Another sample of the same.

3611. Another sample of the same.

3612. Apple quince.—A cultivated variety of *Cydonia Cydonia* (L.) Lyons. Native of Europe and Asia and an important cultivated fruit. Grown at Newark, New Jersey, and presented by H. H. Rusby.

3613. Loquat. Mespilus. Japanese medlar.—The fruit of *Eriobotrya japonica* (Thunb.) Lindl. Native of eastern Asia and cultivated. Collected in the conservatory of the New York Botanical Garden, April, 1905.

3613.1. Choke-berry. Choke pear.—The fruit of *Aronia nigra* (Willd.) Britton. Native of eastern North America. Collected by H. H. Rusby at Lake Mine-gami, near Glenada, Quebec, September, 1920.

3614. Tecocote.—The fruit of *Crataegus mexicanus* DC. Native and cultivated in Mexico. Obtained in Mexico City by H. H. Rusby, November, 1896.

3615. Another specimen of the samp. Same source.

3616. The fruit of a species of *Crataegus*.—Native of the Pacific coast region. Collected by H. H. Rusby at Horn Brook, California, July, 1909.

3617. The fruit of a species of *Crataegus*.—Native of northeastern North America and sold in the Canadian markets.

3618. The fruit of a species of *Crataegus*.—Native of northeastern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, September 1, 1919.

3619. California holly.—The fruit of *Heteromeles arbutifolia* (Poir.) Roem. Native of California and cultivated for ornament. Fruit eaten by the aborigines. Collected in California and presented by Mrs. W. Gilman Thompson.

3620. Talo. Montino.—The fruit of *Osteomeles pernettyoides* Decne. Native of the Andes, South America, and cultivated. Purchased by H. H. Rusby in the market of Bogota, Colombia, August, 1917.

THE PLUM FAMILY (*Amygdalaceae*)

Numbers 3621–3627 represent cultivated varieties of the peach, *Amygdalus Persica* L. Native of southwestern Asia and cultivated in all temperate and subtropical regions.

3621. The Elberta peach.—Representing a race originated in North China. This peach is an abundant yielder, and handsome, but of poor flavor.

3622. The Smock peach, of the same race.—Late, small, woolly, yellow, and tart, valuable for preserving.

3623. The Salway peach.—Representing the Persian race, to which most of our northern-grown varieties belong. Grown and presented by J. A. Staples, of Marlboro, New York.

3624. The late Crawford peach.—One of our best varieties of the same race.

3625. The Iron Mountain peach.—A large white variety of this race, and one of the very best.

3626. The same, canned.

3627. Stevens seedling peach.—Another excellent variety. Presented by J. A. Staples, of Marlboro, New York.

3628. Rough-skinned nectarine.—The fruit of a cultivated variety of *Amygdalus persica nectarina*. Native of Asia and cultivated. Acquired by H. H. Rusby at Redlands, California, August, 1909.

3629. Smooth-skinned nectarine.—Another variety of the same. Same source.

3630. Eastern early wild plum.—The fruit of *Prunus americana* Marsh. Native of the eastern and central United States. Collected by H. H. Rusby at Mt. Airy, North Carolina, June 20, 1909.

3631. Another specimen of the same. Collected by H. H. Rusby at Nashville, Tennessee, August 20, 1913.

3632. Wild yellow, or Canada, plum.—The fruit of *Prunus nigra* Ait. Native of northeastern North America and the Lake Region. Collected by H. H. Rusby at Ulsterville, New York, September 5, 1896.

3633. Another sample of the same. Collected by Ray Knight at Marlboro, New Hampshire, August 29, 1919.

3634. Chickasaw wild plum.—The fruit of *Prunus angustifolia* Marsh. Native of the southeastern and south central United States. Collected by H. H. Rusby at Mt. Airy, North Carolina, June 20, 1909.

3635. Oregon wild plum.—The fruit of *Prunus subcordata* Benth. Native of northern California and Oregon. Collected by H. H. Rusby at Hornbrook, California.

3636. California wild red plum.—Another variety or form of the same, of the same region. Same locality, date and collector.

3637. Beach plum.—The fruit of *Prunus maritima* Wang. Native of the eastern United States sea coast. Collected by H. H. Rusby at Hyannis, Massachusetts, September 7, 1912.

3638. Green gage plum.—A choice cultivated variety of *Prunus domestica* L. Native of Asia. Acquired at Redlands, California, August 24, 1909, by H. H. Rusby.

3639. Burbank sugar plum.—A cultivated variety of plum. Obtained at Redlands California, by H. H. Rusby, August, 1909.

3640. Copper plum.—A cultivated variety derived from *Prunus triflora* Roxb. Native of Japan. Grown and presented by J. A. Staples, of Marlboro, New York.

3641. Damson plum.—Another of the same, especially desirable for preserving. Grown and presented by James A. Staples, of Marlboro, New York.

3642. Plum jam.—Presented by F. H. Leggett & Company, of New York.

3643. Sloe. Black-thorn.—The fruit of *Prunus spinosa* L. Native of Europe. Fruit mostly used for distilling an alcoholic liquor. From the New York market.

3644. Apricot.—The fruit of *Prunus armeniaca* L. Native of Asia and widely cultivated.

3645. Wild red, or bird, cherry.—The fruit of *Prunus pennsylvanica* L.f. Native of eastern and central North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 19, 1919.

3646. White oxheart cherry.—A favorite cultivated variety of *Prunus Avium* L. Native of Europe and cultivated in many forms. This specimen shows some black fruits, due to the influence of the black cherry stock in which the white variety was grafted. Grown and presented by J. A. Staples, of Marlboro, New York.

3647. Black Tartarian cherry.—Another cultivated variety of the same. Same donor.

3648. Yellow Spanish cherry.—Another cultivated variety, of the Duke type. Grown by H. H. Rusby, at Newark, New Jersey, June, 1920.

3648.1. Mazzard cherry. Wild black cherry.—A form of the same species, escaped from cultivation in many places.

3649. Bell Magnifique cherry.—Another cultivated variety of the same. Grown and presented by J. A. Staples, of Marlboro, New York.

3650. Montmorency sour cherry.—Another cultivated variety of the same. Same donor.

3651. Another sample of the same. Grown by H. H. Rusby at Newark, New Jersey.

3652. Big Montmorency cherry. A large form of the preceding. Same donor.

3653. Morello sour cherry.—The fruit of another cultivated variety of the same species. Grown at Newark, New Jersey, by H. H. Rusby.

3654. Choke cherry.—The fruit of *Padus nana* (Du Roi) Roem. Native of eastern and central North America. Collected by H. H. Rusby at Oscoda, Michigan, August 23, 1906.

3655. Another specimen of the same. Collected at Easton, Pennsylvania, by A. A. Tyler, July, 1898.

3656. Western choke cherry.—The fruit of *Padus demissa* (Nutt.) Roem. Native of western North America. Collected at Portland, Oregon, July, 1909, by H. H. Rusby.

3657. California choke cherry.—The fruit of a species of *Padus*. Native of the Pacific region. Collected by H. H. Rusby in the San Bernardino Mountains, August, 1909.

3658. Wild cherry.—The fruit of *Padus virginiana* (L.) Mill. Native of eastern and central North America. Collected by H. H. Rusby at Peekskill, New York, September, 1918.

3659. Flowering specimen of the same. Collected by R. S. Williams in the New York Botanical Garden, May 26, 1919.

3660. Western wild cherry.—The fruit of a species of *Padus*. Native of the southwestern United States. Collected by H. H. Rusby at Johnson Cañon, Arizona, August, 1909.

3661. Yellow Icaco or coco plum.—The fruit of *Chrysobalanus Icaco* L. Native of tropical America, and cultivated. Collected by J. K. Small at Miami, Florida, November, 1904.

3662. Another specimen of the same. From the same locality. H. H. Rusby, January 27, 1907.

3663. Red-fruited variety of the same. J. K. Small, same locality and date as 3103.

3664. Purple-fruited variety of the same. Same source as preceding.

3665. The same. Acquired by H. H. Rusby in Barranquilla, Colombia, September, 1917.

THE MIMOSA FAMILY (*Mimosaceae*)

3666. Jiniquil. Cua Jiniquil.—The fruit of *Inga Jinicuil* Schlecht. Native of Mexico and cultivated. Presented by Mrs. H. O. Robinson, of Cuernavaca, Mexico, July, 1910.

3667. Another specimen of the same. Purchased by H. H. Rusby in the market of Mexico City, February, 1909.

3668. Inga.—The fruit of a species of *Inga*. Obtained by H. H. Rusby in Trinidad, West Indies, May, 1896.

3669. Inga.—The fruit of a species of *Inga*. Collected (specimen "x") by Weiss & Schmidt on the Upper Rio Negro, Brazil, 1907–8.

3670. Inga.—The fruit of a species of *Inga* from the same place, by the same collectors (specimen "vii").

3671. Guama.—The fruit of *Inga coruscana* H. B. K. (?). Purchased by H. H. Rusby in the market of Bogota, Colombia, August, 1917.

3672. St. John's bread. Ceratonia. Locust bean.—The dried fruit of *Ceratonia siliqua* L. Native of Asia and cultivated. The "locust" eaten by St. John and the "husks" eaten by the Prodigal Son.

3673. Saman. Zamang. Rain-tree fruit.—The fruit of *Pithecolobium Saman* (Jacq.) Benth. Native of northern South America, and a favorite shade-tree. A sweet, edible pulp surrounds the seeds. Obtained in the Philippine Islands by D. Leroy Topping.

3674. Picture of the preceding tree.

3675. Mesquit bean. Honey pod. Algarroba.—The fruit of *Prosopis juliflora* (Sw.) DC. Native of the southwestern United States and Mexico. Purchased by H. H. Rusby in the market of Mexico City.

3676. Mesquit flour containing the seeds.—The preceding pods powdered. Obtained in Torres, Mexico, by D. T. MacDougal.

3677. The same, with the seeds removed, mixed with water and dried. One of the principal foods of the desert Indians. Same source as preceding.

3678. Screw bean. Screw mesquit. Tornillo.—The fruit of *Prosopis odorata* Torr. & Frem. Native of the same region as the last.

3679. Screw bean meal.—Made from the preceding in the same way as No. 3676.

3680. Algorobilla pods.—The fruit of *Prosopis dulcis* Kunth. Native of Argentina. Eaten like the preceding.

THE PEA FAMILY (*Fabaceae*)

3681. Habas or havas. French broad bean. Horse bean.—The plant, bearing the pods, of *Faba vulgaris* Moench. Native of Europe and widely cultivated. Grown by H. H. Rusby at Newark, New Jersey, 1919.

3682. The pods of the preceding, chopped and evaporated.

Numbers 3683–3701, inclusive, are string beans, the fruit of cultivated varieties of *Phaseolus vulgaris* L. Native of tropical America and everywhere cultivated in many varieties. They are eaten in the young state. Grown at Newark, New Jersey, by H. H. Rusby.

3683. Red Valentine string bean.

3684. Some of the beans from which the preceding were grown.

3685. Black Valentine string bean.

3686. Some of the beans from which the preceding were grown.

3687. Stringless green pod bean.

3688. Some of the beans from which the preceding plants were grown.

3689. Long yellow six weeks string bean.

3690. Some of the beans from which the preceding plants were grown.

3691. Refugee string bean.

3692. Some of the beans from which the preceding plants were grown.

3693. Wardwell's kidney wax bean.

3694. Some of the beans from which the preceding plants were grown.

3695. Prolific black wax bean.
3696. Some of the beans from which the preceding plants were grown.
3697. King of the Earlies string bean.
3698. Some of the beans from which the preceding plants were grown.
3699. Kentucky wonder pole wax bean.
3700. Some of the beans from which the preceding plants were grown.
3701. Sure crop stringless bean. Grown by H. H. Rusby at Newark, New Jersey, 1919.
3702. Canned string beans.
3703. Pickled string beans.
3704. Sugar pea.—The fruiting branches of a cultivated variety of *Pisum sativum* L. Native of the Mediterannean region and cultivated in many varieties. This variety is cooked in the form of the young pods, containing the seeds, like spring beans. Grown at Newark, New Jersey, by H. H. Rusby.
3705. Some of the peas from which the preceding plants were grown.

3706. Carambola.—The fruit of *Averrhoa carambola* L. (*Oxalidaceae*—Wood-sorrel Family). Native of China and cultivated in tropical regions. The very acid fruit is used in pies and tarts. Acquired in the coastal plain of Porto Rico by B. H. Ducher, December, 1915.

THE RUE FAMILY (*Rutaceae*)

3707. Citron. Cedrat. Adam's-apple.—The fruit of *Citrus cedra* Gallesio. Native of southern Asia and cultivated in tropical regions. Presented by Lanman & Kemp, of New York City.
3708. Preserved citron.—A preserve made of the preceding and used in confections and pastry. From the New York market.
3709. Etrog. Jewish lemon.—The fruit of a variety of *Citrus Medica* L. Native of southern Asia and cultivated in tropical countries. Used in Hebrew religious rites.
3710. Porto Rico limes.—The fruit of *Citrus Lima* Lunan. Native of southern Asia and cultivated. Acquired in Porto Rico by P. Wilson, August, 1902.
3711. Mexican limes.—The same acquired by H. H. Rusby in Mexico City, November, 1896.
3712. Rough lemons.—The fruit of a variety of *Citrus Limonum* Risso. Native of Asia and cultivated. Acquired in the Bahamas by Mrs. N. L. Britton, October, 1904.
3713. A very large form of the same.
3714. A peculiar form of the same. Acquired by J. K. Small at Miami, Florida, in 1904.
3715. Smooth lemons.—Collected in a wild state at Miami, Florida, by J. K. Small, November, 1904.
3716. Another sample of large size. From the New York market. Presented by H. H. Rusby.
3717. Princess lemon.—A very large lemon, perhaps a hybrid between the lemon and the grape-fruit. Cultivated at Miami, Florida. Presented by H. H. Rusby.

3718. A somewhat similar form grown in the conservatory of the New York Botanical Garden.

3719. Peculiar lemon.—Apparently a hybrid between the orange and lemon. The inner structure, pulp, juice and flavor, are of the lemon type, but the color and odor of the rind are those of the orange or tangerine.

3720. Round lemon or lime. A peculiar variety of *Citrus Limonum* Risso. Acquired in Bermuda by N. L. Britton.

3721. Small sweet lemon or lime.—The fruit of *Citrus Limetta* Risso. Acquired in Bermuda by N. L. Britton.

3722. Bergamot.—The fruit of *Citrus Bergamia* Risso & Poit. Perhaps a hybrid of unknown parentage. Originated in Italy and cultivated. Presented by Lanman & Kemp.

3723. Jamaica grape-fruit or shaddock.—The fruit of a cultivated variety of *Citrus grandis* Osbeck. Native of eastern Asia and cultivated in all tropical and subtropical countries. Acquired by H. H. Rusby in the New York market.

3724. Grape-fruit from Musa Isle, Florida. Acquired by H. H. Rusby in February, 1914.

3725. Pear-shaped blood shaddock. Presented by F. von Wilmousky, January 22, 1907.

3726. Singapore grape-fruit. Obtained by P. Wilson in Singapore.

3727. A veay large variety of grape-fruit, possible a hybrid, cultivated at Miami, Florida, and acquired by H. H. Rusby.

3728. Hardy orange. Chinese orange.—The fruit of *Citrus trifoliata* L. Native of China and hardy in temperate regions. Grown in the open on the grounds of the New York Botanical Garden.

3729. Another specimen of the same.

3730. Bitter orange. (See No. 1556.) Used in making English orange marmalade. Acquired by P. Wilson at Puerta Sienna, Honduras, in 1903.

3731. Another sample of the same. Acquired by H. H. Rusby in Mexico City, November, 1896.

3732. Seedless navel orange.—A choice variety of *C. Aurantia* L. Said to have originated in southern California. From the New York market.

3733. Another specimen of the same. Collected in a wild state at Miami, Florida, by J. K. Small, November, 1904.

3734. Blood orange.—Another variety of the same, with red juice. Grown in California and acquired in the New York market by H. H. Rusby.

3735. Lu Kyao. Chinese big orange.—Produced in Hong Kong, China, and acquired in the New York market by F. von Wilmousky.

3736. Kumkwat.—The fruit of *Citrus japonica* Thunb. Native of Japan and cultivated. Acquired in the New York market by H. H. Rusby.

3737. Tangerine. Mandarin. Kid-glove orange.—The fruit of *Citrus nobilis* Lour. Native of China and cultivated. Acquired in the New York market by H. H. Rusby.

3738. Ciaela.—The fruit of a species of *Bunchosia* (*Malphighiaceae*—Malpighia Family) eaten by the Indians of the Upper Rio Negro, in Brazil. Acquired by Weiss & Schmidt.

3739. Nanchi amarilla. Yellow nanchi.—The fruit of *Byrsonima Karwinskiana* Juss. Same family. Native of Mexico. Collected by H. H. Rusby near Limon, Guerrero, Mexico, July 3, 1910.

3740. Another sample of the same. Purchased in the market of Cordova, Mexico, by H. H. Rusby.

3741. West Indian gooseberry. Otahita gooseberry.—The fruit of *Cicca disticha* L. (*Euphorbiaceae*—Spurge Family). Native of the East Indies and cultivated. Acquired in Porto Rico, January 3, 1899, by A. A. Heller.

3742. Another specimen of the preceding. Grown at Miami, Florida, by E. E. Bessey.

3743. Another specimen of the same.

3744. Crowberry. Black-berried Heath.—The fruit of *Empetrum nigrum* L. (*Empetraceae*—Crow-berry family). Native of the north temperate zone. Collected by N. McCook at Kotzebue Sound, Alaska, 1920.

THE SUMAC FAMILY (*Anacardiaceae*)

3745. Cashew. Caju. Acajou. The fleshy-thickened edible stems of the pod of *Anacardium occidentale* L. (See No. 2713). Presented by the New York College of Pharmacy.

3746. Another specimen of the same. Acquired by G. V. Nash, in Haïti, in 1903.

3747. Another sample acquired by H. H. Rusby at the Trinidad Botanic Garden in 1896.

3748. Preserved cashews.

3749. Pale-green mangoes.—The fruits of a cultivated variety of *Mangifera indica* L. Native of the East Indies and cultivated in all tropical regions. Acquired in Trinidad, West Indies, by H. H. Rusby, in 1896.

3750. Indian mangoes.—The same, obtained in Singapore by Percy Wilson, in 1902.

3751. Large yellow and red mangoes. Collected at Sacupana, Venezuela, by H. H. Rusby, in 1896.

3752. Jules mangoes. Grown in the Trinidad Botanic Garden and presented by Miss Hart, in 1912.

3753. No. 11 Mango. Presented by Mrs. Brockman-Jacosch, July, 1913.

3754. Spanish plum. Ciruela. Hog plum.—The fruit of *Spondias purpurea* L. Native of tropical America and cultivated. Acquired on the Upper Rio Negro, Brazil, by Weiss & Schmidt, 1907–8.

3755. Another sample of the same. Acquired at Sagua, Cuba, by N. L. Britton, September 5, 1904.

3756. Another sample, from Mexico. Acquired in the market of Mexico City by H. H. Rusby, in 1896.

3757. Red hog plum. Another variety of the same. Acquired in the market of Queretaro, Mexico, by H. H. Rusby, in 1910.

3758. Akee. Akebia.—The fruit of *Blighia sapida* Koenig. (*Sapindaceae*—Soapberry family). Native of tropical Africa and cultivated in tropical regions. The pulp is delicious but the seeds are poisonous. Obtained in Nassau, Bahamas, by N. L. Britton, August, 1904.

3759. Mamon. Mamoncilla.—The fruiting branches of *Melicocca bijuga* L. (Same family). Native of tropical America and cultivated. Purchased by H. H. Rusby at a railway station in the Magdalena River valley, Colombia, August, 1917.

3760–3776. Seventeen samples of preserved jujubes, or Chinese figs, the preserved fruits of *Zizyphus sativa* Gaertn. (*Rhamnaceae*—Buckthorn family). Native of eastern Asia and cultivated. Presented by the United States Department of Agriculture.

3777. Pigeon-berry. False Cascara sagrada.—The fruits of *Rhamnus californica* Esch. (Same family). Native of California. Collected at Mount Tamalpais, California, by H. H. Rusby, August, 1909.

THE GRAPE FAMILY (*Vitaceae*)

3778. Muscadine. Bullace or southern fox grape.—The fruit of a cultivated plant of *Vitis rotundifolia* Michx. Native of the southeastern and south-central United States. From South Carolina. Presented by James A. Dillingham.

3779. Sweet-scented or bull frost grape.—The fruit of *Vitis vulpina* L. Native of eastern and central North America. Collected at Nashville, Tennessee, by H. H. Rusby, August 20, 1913.

3780. Another sample of the same. From Salem, Indiana, through William H. Rudder.

3781. Another sample from the same source.

3782. Clinton grape.—A cultivated hybrid of the preceding with *V. Labrusca*, specially valued for jelly and preserves.

Numbers 3783–3790 unless otherwise stated were presented by the Munson Nurseries, Denniston, Texas, in 1919.

3783. America.—A seedling of Jaeger's No. 70, originating from *V. Lincecumii* Munson and *V. rupestris* Scheele.

3784. Summer, or pigeon, grape.—The fruit of *Vitis aestivalis* Michx. Native of the eastern and central United States. Collected at Bronx Park, New York, by Percy Wilson, September, 1899.

3785. Ericson.—A hybrid between America and R. W. Munson, and originating from *V. Lincecumii*, *V. rupestris*, *V. aestivalis*, and *V. Bourquiniana* Munson.

3786. Cloetia.—A hybrid having the same parentage as the preceding.

3787. Hopkins.—A hybrid between the preceding variety and the Post-oak grape, *V. Lincecumii* Munson.

3788. R. W. Munson.—A hybrid between Post-oak and Triumph and originating from *V. aestivalis*, *V. Lincecumii*, and *V. Bourquiniana*.

3789. Albania.—A hybrid of Post-oak, Norton, and Herbert, and having its origin in the same three species as the preceding.

3790. Muench.—A hybrid between Neosho and Herbemont, and originating from *V. Lincecumii* and *V. Bourquiniana*.

3791. Frost grape. Raccoon or winter grape.—The fruit of *Vitis cordifolia* Lam. Native of the eastern and central United States. From Salem, Indiana, by William H. Rudder.

3792. A large-fruited variety of the preceding. Perhaps a hybrid of this with another species. Collected at Oscawanna Lake, New York, by H. H. Rusby, September, 1918.

3793. Downy, or sweet, winter grape.—The fruit of *Vitis cinerea* Englem. Native of the southern central United States. Collected by H. H. Rusby at Nashville, Tennessee.

3794. Munson's grape. Mexican grape.—The fruit of *V. Munsoniana* Simpson. Clusters and grapes of enormous size, but pulp extremely acid, mucilaginous, and inedible. Native of Mexico. Collected by H. H. Rusby on Limon Mountain, Guerrero, Mexico.

3795. Cañon grape.—The fruit of *Vitis arizonica* Engelm. Native of the southwestern United States and Mexico. Collected in Johnson's Cañon, Arizona, by H. H. Rusby, August, 1909.

3796. California grape.—The fruit of *Vitis californica* Benth. Native of the Pacific Coast region. Collected at Redlands, California, by H. H. Rusby, August, 1909.

3797. The fruit of *Vitis bicolor* Le Conte. Native of the eastern and central United States. From Salem, Indiana, by W. H. Rudder.

3798. Common wild, or fox, grape.—The fruit of *Vitis Labrusca* L. Native of the eastern and central United States. Collected by H. H. Rusby at Oscawanna Lake, New York, September, 1918.

3799. Concord grape.—The fruit of a cultivated form of the preceding, originating accidentally. Grown by H. H. Rusby at Newark, New Jersey.

3800. Worden grape.—An improved form derived from the Concord. Same donor.

3801. Jefferson grape. A cultivated variety said to be the result of hybridization between Iona and Concord.

3802. Niagara grape.—A favorite cultivated variety, resulting from hybridization of Concord with Cassidy. Same donor.

3803. Eaton grape. Another cultivated variety. Same donor.

3804. Lindley grape.—The result of hybridization between *V. Labrusca* and *V. Chasselis*. Same donor.

3805. Escol. Palestine grape. Biblical grape.—The fruit of *Vitis vinifera* L. Native of Europe and Asia, and cultivated in many varieties in all warm regions. Grown in Palestine and supposed to be of the same stock as that mentioned in the Old Testament.

Numbers 3806–3814, inclusive, are varieties of *Vitis vinifera* L. cultivated for making raisins. Grown in California and presented by G. W. Horsford, October, 1909.

3806. Verdelle grape.

3807. Cornichon grape.

3808. Another sample of the preceding variety.

3809. Black Morocco grape.

3810. Black Ferrara grape.

3811. Emperor grape.

3812. Black Emperor grape.

3813. Flame Tokay grape.

3814. Another sample of the same.

3815. Sultana raisins. A small seedless variety.

3816. California raisins, made from grapes grown in California.

3817. Greek currant grapes.—A seedless variety of the same species, yielding the dried grapes known as Greek or Zante Currants.

3818. Currants produced by drying the preceding grapes.
3819. Catawba grape.—Said to be a hybrid between *V. Labrusca* and *V. vinifera.* Grown at the Munson Nurseries, Denniston, Texas.
3820. Another specimen of the same. Grown by H. H. Rusby, at Newark, New Jersey.
3821. Delaware grape.—Another variety of the same origin. Same donor.
3822. Brighton grape. Said to have originated like the preceding. Same donor.
3823–3830 represent hybrids between American species and varieties or hybrids of *V. vinifera,* originated at and presented by the Munson Nurseries, of Denniston, Texas.
3823. President.—A pure seedling of Herbert, and originating in V. *Labrusca* and *V. vinifera.*
3824. Bailey.—A hybrid of Post-oak and Triumph, and originating in *V. Lincecumii, V. Labrusca,* and *V. vinifera.*
3825. Another specimen of the same.
3826. Fern Munson.—A hybrid originating in the same species as the preceding.
3827. Armalaga.—A hybrid of Arlong and Malaga and originating in the same species as the preceding.
3828. Brilliant.—A hybrid of Lindley and Delaware and originating in *V. Labrusca, V. vinifera,* and *V. Bourquiniana.*
3829. Ellen Scott.—A hybrid of Armlong and Herbemont and originating in *V. Lincecumii, V. Labrusca, V. vinifera,* and *V. Bourquiniana.*
3830. Lomanti.—A hybrid of Salado and Pense, and originating in the species *V. Champlini, V. Labrusca, V. vinifera,* and *V. Bourquiniana.*

THE MALLOW FAMILY (*Malvaceae*)

3831. Vina. Jamaica sorrel.—The unripe fruit of *Hibiscus Sabdariffa* L. Used in making salads. Collected at Miami, Florida, November, 1904, by J. K. Small.
3832–3836, inclusive, are cultivated varieties of okra, the fruit of *Hibiscus esculentus* L. Native of tropical Africa and everywhere cultivated. Grown at Sparkhill, New York, by Martin Ball, October, 1906.
3832. Early dwarf okra.
3833. Perkins long pod okra.
3834. Kleckley's favorite okra.
3835. Lady finger okra.
3836. White velvet okra.

3837. Kutchi-Pungara.—The fruit of *Actinidia arguta* Miq. (*Dilleniaceae*—Dillenia Family). Native of eastern Asia and cultivated. Grown by Francis Lynde Stetson at Sterlington, New Jersey.
3838. Madronya.—The fruiting branches of *Rheedia Madruno* Pl. & Tr. (*Guttiferae*—Gamboge Family). Native of tropical America, and cultivated. The pulp is sweet and delicious but the seeds are acrid and poisonous. Purchased by H. H. Rusby in the market of Bogota, Colombia, August, 1917.

3839. Mangosteen.—The fruit of *Garcinia Mangostana* L. Same family. Native of the East Indies and cultivated in tropical countries. Regarded as one of the most delicious of known fruits. Obtained by Percy Wilson at Singapore, in 1901.

3840. Another specimen of the same, from the same source.

3841. Mammea or Mammee apple. The fruit of *Mammea americana* L. (Same family). Native of the West Indies and cultivated. Collected in Porto Rico by A. A. Heller, April, 1900.

THE PASSION-FLOWER FAMILY (*Passifloraceae*)

3842. May-pops.—The fruit of *Passiflora incarnata* L. Native of the southeastern United States and cultivated for ornament. Presented by Joseph Harris, of Jonesboro, Tennessee.

3843. Another specimen of the same. Collected by H. H. Rusby, near Nashville, Tennessee, August 30, 1913.

3844. Bell-apple.—The fruit of *Passiflora laurifolia* L. Native of tropical America and cultivated. Obtained on the Island of St. Kitts, West Indies, by Britton & Cowell, September, 1901.

3845. Another sample of the same. Obtained in the Botanical Garden of Singapore, East Indies, by Percy Wilson, in 1901.

3846. Granadilla.—The fruit of *Passiflora guadrangularis* L. Native of the West Indies and cultivated. Purchased by H. H. Rusby in the market of Mexico City.

3847. Granadilla.—The fruit of *Passiflora ligularis* Juss. Native of the South American Andes. Collected by H. H. Rusby at Balsillas, Colombia August, 1916.

3848. Sweet granadilla.—The fruit of an undetermined species of *Passiflora*. Purchased in Mexico City by H. H. Rusby.

3849. Another similar fruit, perhaps of the same species as the preceding.

3850. The fruit of *Passiflora pedata* L. Acquired by N. L. Britton at Rio San Juan, Santa Clara, Cuba, March 24, 1910.

3851. Curuba amarilla. Yellow-seeded Curuba. The fruit of *Tacsonia mollissima* H. B. K. Native of the South American Andes and cultivated. Collected by H. H. Rusby at Balsillas, Colombia, August, 1916.

3852. Curuba negra. Black-seeded Curuba.—The fruit of a species of *Tacsonia*. Home and source same as of preceding.

3853. Galupas.—The fruit of *Poggendorffia rosea* Karst. (?) Acquired by H. H. Rusby in the market of Bogota, Colombia, August, 1917.

THE PAPAW FAMILY (*Caricaceae*)

3854. Jarilla.—The fruit of *Jarilla Sesseana* (Ramirez) Rusby. Native of the tableland of central Mexico. Collected by H. H. Rusby at Empalma de Gonzales, Mexico, July 10, 1900.

3855. Papaya. Papaw. Tree melon.—The fruit of *Carica Papaya* L. Native of tropical America and cultivated in all tropical and subtropical countries. From Miami, Florida. Presented by A. Henning.

3856. A specimen of the same collected in the conservatory of the New York Botanical Garden, November, 1905.

3857. A small-fruited variety of the same. Acquired by H. H. Rusby in the market of Medellin, Colombia, August, 1917.

THE CACTUS FAMILY (*Cactaceae*)

3858. The stem of *Opuntia Ficus-indica* Mill. Native of Central America and cultivated for its fruit. Grown in the conservatory of the New York Botanical Garden.

3859. Indian fig. Prickly pear. Tuna.—The fruit of the preceding. Pulp pinkish-yellow. Purchased by H. H. Rusby in the market of Queretaro, Mexico, August 2, 1920.

3860. Another sample of the same. Acquired by Mrs. N. L. Britton in the market of Zocanistlas, Mexico, November, 1896.

3861. Another sample of the same. Acquired by N. L. Britton in Bermuda, from cultivated plants.

3862. Cardon. Prickly pear.—The stem of *Opuntia streptacantha* Lem. Native of tropical America, and cultivated. Grown in the conservatory of the New York Botanical Garden.

3863. The fruit of the preceding. From the New York market. Presented by the New York Horticultural Society, October, 1905.

3864. Another sample of the same. Acquired by Mrs. N. L. Britton in the market of Zocanistlas, Mexico, November, 1896.

3865. Another specimen of the same. Acquired by H. H. Rusby in the market of Queratarо, Mexico, August, 1910.

3866. Another specimen of the same. Same source as the preceding.

3867. Camuesa prickly pear.—The joints of *Opuntia robusta* Wendl. Native of tropical America and cultivated for its fruit. Grown in the conservatory of the New York Botanical Garden.

3868. The fruits of the preceding. Pulp white, very juicy and of peculiar flavor. Acquired by H. H. Rusby in the market of Queretaro, Mexico, August, 1910.

3869. Queso de Tuna. Tuna cheese.—The dried, pressed fruits of species of *Opuntia*. Acquired in the market of Juarez, Mexico, by H. H. Rusby, February, 1904.

3870. Queso de Tuna alba. White Opuntia marmalade. Made from the unripe fruits of species of *Opuntia* by straining out the seeds, boiling the pulp, stirring vigorously while cooling, and pressing into cakes in corn husks. Acquired by Edward Palmer in San Luis Potosi, Mexico.

3871. Queso de Tuna de Color. Red Opuntia marmalade.—Made from the ripe fruits of the same, in the same manner, but not stirred while cooling. Same source as preceding.

3872. Garambullo.—The fruit of *Myrtillocactus geometrizans* (Mart.) Consale. Native of the tableland of Central Mexico, where the fruit is of considerable commercial importance. The berries are free from spines, sweet and delicious, and possess the flavors of mulberry, raspberry and strawberry, their respective strengths in the order named. Acquired by H. H. Rusby in the market of Empalma de Gonzales, Mexico, June 18, 1910.

3873. The same fruits, on the stem. Collected by H. H. Rusby in the same locality, June 20, 1910.

3874. The same stems in flower. Same collector, locality, and date.

3875. The same fruits, dried for the market. Purchased in the same locality, on the same date.

3876. Nyctocereus.—The fruiting stems of *Nyctocereus serpentinus* Britton & Rose. Native of the Mexican tableland. Collected by H. H. Rusby at Empalma de Gonzales, Mexico, in August, 1910.

3877. Harrisia.—The stems of *Harrisia eriophora* (Pfeiffer) Britton. Native of the West Indies. Grown in the conservatory of the New York Botanical Garden.

3878. The fruits of the preceding. Collected by J. A. Shafer at Los Martinos, Cuba.

3879. Gooseberry cactus. Patilon.—The stems of *Pereskiopsis Pititache* (Karwinsky) Britton & Rose. Grown in the conservatory of the New York Botanical Garden.

3880. Fruits of the same.—Barbadoes gooseberries. Sold in the dried condition for use as gooseberries, the flavor being much the same. Acquired by H. H. Rusby in Queretaro, Mexico, August, 1910.

THE BUFFALO-BERRY FAMILY (*Elaeagnaceae*)

3881. Canadian Buffalo-berry.—The fruit of *Lepargyrea canadensis* (L.) Greene. Native of central North America.

3882. Buffalo-berry. Rabbit-berry. Silver-leaf. Beef-suet tree. The fruit of *Elaeagnus argentea* Pursh. Native of central North America. An important aboriginal food, the pulp of agreeable flavor and the seed fatty and nutritious. Grown in the grounds of the New York Botanical Garden.

3883. Japanese cherry.—The fruit of *Elaeagnus multiflora* Thunb. Native of Japan. Collected in the New York Botanical Garden.

3884. The flowering branches of the same. Same source.

3885. The flowering branches of *E. angustifolia* L. Collected in the New York Botanical Garden, June 15, 1920.

3886. The flowering branches of *E. umbellata* Thunb. Same home and source.

3887. The fruit of the preceding species. Same source.

3888. The flowering branches of another Japanese species of *Elaeagnus*. Same source.

3889. Flowering branches of *E. commutata* Bernh. Same source.

3890. Pomegranato. Granado.—The fruit of *Punica Granatum* L. (*Punicaceae*—Pomegranate Family). Native of Persia and cultivated in subtropical and warm-temperate regions. From the New York market. Presented by Mrs. N. L. Britton, October, 1904.

THE MYRTLE FAMILY (*Myrtaceae*)

3891. Jambosteen. Blush plum.—The fruit of *Eugenia Jambolana* Lam. Native of the East Indies and Oceanica, and cultivated. Acquired by Percy Wilson in the Singapore Botanical Garden, in June, 1901.

3892. Rose-apple. Poma rosa.—The fruit of *Eugenia Jambos* L. Native of the Malay region and cultivated in tropical countries. Acquired by A. A. Heller in Porto Rico, September, 1899.

3893. Surinam cherry.—The fruit of *Eugenia uniflora* L. Native of Brazil and cultivated. Acquired by N. L. Britton in Bermuda, September, 1905.
3894. Another specimen of the same. Acquired at the same place, August, 1912, by Britton & Brown.
3895. Arrayan de Bogota.—The fruit of *Eugenia mollis* Willd. Native of the Colombian Andes. Used as a spice and condiment. Acquired by H. H. Rusby in the market of Bogota, Colombia, August, 1917.
3896. Mexican guavas.—The fruit of *Psidium Guajava* L. Native of tropical America and cultivated. Acquired by H. H. Rusby in the market of Mexico City, November, 1896.
3897. Guava cheese.—A cake made of dried, pressed guavas. Presented by W. W. Aranha, of Nassau, Bahamas.
3898. Guava jelly.—A jelly made of guava fruits.

3899. Bunch-berry. Cracker-berry. Bunch-plum.—The fruit of *Chamaepericlymenum canadense* (L.) Asch. & Graebn. (*Cornaceae*—Cornel Family) Native of North America. Collected at Oscoda, Michigan, August, 1908, by H. H. Rusby.
3900. Another sample of the same. Collected by H. H. Rusby at Field, British Columbia, August, 1909.

THE HEATH FAMILY (*Ericaceae*)

3901. Shallon berry. Salal.—The fruit of *Gaultheria Shallon* Pursh. Native of northwestern North America. An important aboriginal fruit. Collected by H. H. Rusby, at Toledo, Oregon, August, 1909.
3902. Checkerberry. Wintergreen berry.—The fruit of *Gaultheria procumbens* L. Native of eastern and central North America. Collected by H. H. Rusby at Marlboro, New Hampshire, 1919.
3903. Bearberry. Uva-ursi.—The fruit of *Uva-ursi Uva-ursi* (L.) Britton. Native of the north temperate zone. Collected by H. H. Rusby at Oscoda, Michigan, August 20, 1906.
3903.1. Another sample of the same. Collected at Kotzebue Sound, Alaska, by N. McCook, 1920.
3904. Manzanita. Madronya.—The fruit of *Arctostaphylos tomentosa* Dougl. Native of western North America. Collected by H. H. Rusby at Mt. Tamalpais, California, August, 1909.
3904.1. Tea-berry. Creeping snowberry. Moxie berry. Ivory plum.—The fruit of *Chiogenes hispidula* (L.) T. & G. Native of eastern and central North America. Collected by H. H. Rusby at Lake Minagami, near Glenada, Quebec, August, 1920.

THE BLUEBERRY FAMILY (*Vacciniaceae*)

3905. Britton's blueberry.—The fruit of *Vaccinium Brittonii* Porter. Native of the northeastern United States. Collected by Mrs. N. L. Britton, on Bear Mountain, Stockbridge, Massachusetts.

3906. Sour blue huckleberry.—The fruit of *V. ovalifolium* J. E. Smith. Native of northwestern North America. Collected by H. H. Rusby at Sielitz, Oregon, July, 1909.

3907. Low blueberry. Blue huckleberry.—The fruit of *V. vacillans* Kalm. Native of northeastern North America. Collected by Clute & Wilson at Lindenhurst, New York, August 10, 1899.

3907.1. The same in flower. Collected by H. H. Rusby at Little Falls, New Jersey, May 19, 1920.

3908. Another sample of the same, varying in the minutely denticulate leaf margin. Collected by H. H. Rusby at Marlboro, New Hampshire, July 13, 1919.

3909. Evergreen huckleberry.—The fruit of *V. ovatum* Pursh. Native of the Pacific coast region of North America. Collected by H. H. Rusby on Mount Tamalpais, California, July, 1909.

3910. Sour red huckleberry.—The fruit of *V. parvifolium* J. E. Smith. Native of northwestern North America. Collected by H. H. Rusby at Sielitz, Oregon, July, 1909.

3911. Low sweet blueberry.—The fruit of *V. pennsylvanicum* Lam. Native of the northeastern United States. Collected by H. H. Rusby at Oscoda, Michigan, August 20, 1906.

3912. Another sample of the same. Collected by H. H. Rusby at Marlboro, New Hampshire, July 20, 1919.

3913. A form of the same species, with hairy lower leaf-surfaces. Same data as the preceding.

3914. Black low sweet blueberry.—The fruit of *V. pennsylvanicum nigrum*. Native of northeastern North America. Same data as for 3912.

3915. Another sample of the same, collected at the same place, on September 20, 1919.

3916. Narrow-leaved low sweet blueberry.—The fruit of *V. pennsylvanicum angustifolium*. Probabiy a distinct species. Native of northeastern North America. Same data as for 3912.

3917. Tall black blueberry.—The fruit of *V. atrococcum* (A. Gray) Heller. Native of northeastern North America. Form with the leaf-margin bristly-serrate. Collected at Marlboro, New Hampshire, July 13, 1919, by H. H. Rusby.

3918. Another form of the preceding with the leaf-margin entire but hairy. Same locality and date.

3919. Another form of the same, having the leaves hairy beneath and smooth and shining above. Same locality and date.

3920. Another form of the same, having the leaves densely hairy beneath. Same locality. Collected September 20, 1919.

3921. Another form, having the entire-margined leaves hairy on both surfaces. Same locality. Collected July 13, 1919.

3922. Another form, having the leaves green on both sides, paler beneath, the margins denticulate, but not ciliate. Same locality and date.

3923. Canada blueberry. Sour-top or velvet-leaf blueberry.—The fruit of *V. canadense* Kalm. Native of northern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 13, 1919.

3924. Another form of the preceding, having the leaf margin crenate-dentate. Same locality and date.

3925. Another form. The margin dentate and ciliate. Same locality and date.

3926. High blueberry.—Flowering stems of *V. corymbosum* L. Native of eastern and central North America. Collected by H. H. Rusby at Belleville, New Jersey, April, 1919.

3927. The fruit of the preceding species. Same locality. Collected July 3, 1919.

3928. The same, collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

3929. Another form of the same with acuminate leaves. Same locality and date.

Nos. 3929.1 to 3929.8 represent cultivated varieties of blueberries originated at the U. S. Department of Agriculture Station at White's Bog, New Jersey, and were presented by Miss Elizabeth White, August 9, 1920.

3929.1. Rubel blueberry.—Produced under cultivation of a selected wild plant of *V. corymbosum.*

3929.2. Adams blueberry.—Another cultivated variety, of the same origin and production as the preceding.

3929.3. Sam. Another of the same group.

3929.4. Harding. Another of the same group.

3929.5. Another cultivated select wild plant of the same.

3929.6. Blueberry No. 620 A.—From a plant produced by crossing two selected plants of *V. corymbosum.*

3929.7. Blueberry No. 830 C.—Another variety having a similar origin to that of the preceding.

3929.8. Blueberry No. 1232 A.—A hybrid of *V. corymbosum* and *V. pennsylvanicum,* in the proportion of three-fourths of the former and one-fourth of the latter.

3930. The fruit of *V. corymbosum amoenum* A. Gray. Native of northeastern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 19, 1919.

3931. The fruit of *V. corymbosum pallidum* A. Gray. Native of northeastern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 19, 1919.

3932. Canned blueberries, of various species and varieties. Presented by Mrs. H. H. Rusby, of Newark, New Jersey.

3933. Dried myrtleberries or whortleberries.—The dried fruit of *V. Myrtillus* L. Native of the north temperate zone. From the New York market. Presented by H. H. Rusby.

3933.1. Mountain cranberry. Cowberry.—The fruiting branches of *Vitis-Idaea Vitis-Idaea* (L.) Britton. Native of northern Europe and North America. Collected by N. McCook at Kotzebue Sound, Alaska, 1920.

3934. Mountain gooseberry.—The fruit of *Polycodium candicans* (C. Mohr.) Small. Native of the southeastern United States. Collected by H. H. Rusby at Mt. Airy, North Carolina.

3935. Deerberry. Green huckleberry.—The flowering branches of *P. stamineum* (L.) Greene. Native of eastern North America. Collected by H. H. Rusby at Upper Montclair, New Jersey, May, 1919.

3935.1. The half-grown fruit of the preceding.

3936. The fruit of the preceding. Collected in New Jersey and presented by Mrs. E. W. Given, of Newark, New Jersey.

3937. Blue tangleberry or dangleberry.—Flowering specimens of *Gaylussacia frondosa* (L.) T. & G. Native of the eastern United States. Collected by H. H. Rusby near Hammonton, New Jersey, 1920.

3937.1. Fruiting specimens of the same. White's Bog, New Jersey, August 9, 1920. Collected by H. H. Rusby.

3938. High bush huckleberry or crackleberry.—Flowering branches of *Gaylussacia baccata* (Wang.) K. Koch. Native of eastern North America. Collected by H. H. Rusby at Little Falls, New Jersey, May, 1920.

3938.1. Fruiting specimen of the same. Collected by Mrs. M. C. Hoegen near Tuckerton, New Jersey, July 23, 1920.

3938.2. Another specimen in fruit, with blue berries. Collected by H. H. Rusby under pine trees at Upper Montclair, New Jersey, August 1, 1920.

3938.3. Gaylussacia glaucocarpa (Robinson) Rusby, in fruit. Collected by H. H. Rusby beside No. 3938.2 and clearly a distinct species.

3938.4. Fruiting branches of *G. dumosa* (Andr.) H. G. Collected by H. H. Rusby at White's Bog, New Jersey, August 9, 1920.

3939. *Gaylussacia brachycera* (Michx.) A. Gray. Collected by J. K. Small near New Bloomfield, Pennsylvania, August 19, 1919.

3940. Uva Anis. Anise grape.—The fruit of *Psammisia sclerophylla* Pl. & Lindl. Native of the same region as the following and similarly used. Same source.

3941. Uva Camarona de Bogota. Camaron grape of Bogota.—The fruit of *Psammisia macrophylla* Klotsch. Native of the Colombian Andes and an important commercial fruit there. Acquired by H. H. Rusby in the market of Bogota, Colombia, August, 1917.

3942. Large cranberry.—The fruit of *Oxycoccus macrocarpus* (Ait.) Pers. Native of northern North America. Collected by H. H. Rusby at Sea Girt, New Jersey, July 27, 1920.

3943. The commercial cultivated fruit of the preceding. From the New York market.

3944. Howe cranberry.—A superior cultivated variety of the same. Grown at Barnstable, Massachusetts, and presented by Z. Perry.

3945. Small, or European, cranberry. Moorberry. Bogberry. Marshberry. Mossberry.—The fruit of *Oxycoccus Oxycoccus* (L.) MacM. Native of the north temperate zone. The specimen shows it as it is grown in the moss. Collected by H. H. Rusby at Oscoda, Michigan.

3946. The same, collected by H. H. Rusby at Little Moose Lake, New York.

THE SAPOTA FAMILY (*Sapotaceae*)

3947. Sapodilla. Naseberry. Nispero.—The fruit of *Sapota Achras* Mill. Native of tropical America and cultivated. Purchased by H. H. Rusby in the market of Port of Spain, Trinidad, August, 1896.

3948. Bull-fruit.—An edible sapotaceous fruit.—Probably a species of *Mimusops*. Collected by H. H. Rusby in the valley of the Magdalena River, Colombia, 1917.

3949. Star-apple. Cainito.—The fruit of *Chrysophyllum Cainito* L. Native of the West Indies and cultivated in tropical countries. Acquired by A. A. Heller in Porto Rico, March, 1900.

3590. Another specimen of the same. Acquired by H. H. Rusby in the Trinidad Botanic Garden, May, 1896.

3951. Sapote de Ave. Bird sapota.—The fruit of *Sideroxylon mexicanum* Hemsl. (?) Native of Mexico. Collected by H. H. Rusby at Limon, Guerrero, Mexico, July, 1910.

3952. Mamey.—The fruit of *Lucuma serpentaria* H. B. K. Native of Cuba and cultivated. Collected by Britton & Wilson at Cienfuegos Bay, Cuba, March, 1910.

3953. Sapote boracho. Sapote amarillo. Yellow sapota.—The fruit of *Lucuma salicifolia* H. B. K. Native of Mexico and cultivated. Acquired by H. H. Rusby in the market of Mexico City.

3954. White sapote. Marmalade fruit. Bully-tree.—The fruit of *Lucuma mammosa* (L.) Juss. Native of the West Indies and cultivated. Same source as last.

3955. A large-fruited cultivated form of the same. Same source.

3956. A sapote of unknown botanical origin.

3957. An undetermined sapotaceous fruit from the Trinidad Botanic Garden

3958. Kaffir orange.—The fruit of *Strychnos spinosa* Lam. (*Loganiaceae*—Nux-vomica Family). Native of South Africa. Acquired by J. K. Small from cultivated trees at Miami, Florida. Presented by Edward Simmonds.

THE PERSIMMON FAMILY (*Ebenaceae*)

3959. Persimmon. Date plum. Winter plum.—The fruit of *Diospyros virginiana* L. Native of the eastern United States. Collected at Metuchin, New Jersey, by L. M. Underwood, October, 1901.

3959.1. Mosier's persimmon.—The fruit of *Diospyros Mosieri* Small. Native of southern Florida. Presented by C. A. Mosier.

3960. Sapote negra. Sapote prieta. Black sapota.—The fruit of *Drospyros Ebenaster* Retz. Native of the East Indies and cultivated. Purchased by H. H. Rusby in the market of Mexico City.

3961. Another sample of the same.

3962. Japanese persimmon.—The fruit of *Diospyros Kaki* L.f. Native of Japan and cultivated. Acquired by J. C. Greene at Miami, Florida, January, 1904.

3963. Another specimen of the same. From the New York market.

3964. Tsuro-no-ko. Stork's-egg.—A small-fruited variety of the preceding. From the P. J. Berkman's Company, Augusta, Georgia.

3965. Philippine persimmon.—The fruit of *Diospyros discolor* Willd. Native of the Philippine Islands. Acquired by H. H. Rusby in the Trinidad Botanic Garden, May, 1896.

THE OLIVE FAMILY (*Oleaceae*)

3966. Mayepia fruit.—The fruit of *Mayepia macrocarpa* Rusby. Native of southwestern Mexico. Discovered and collected by H. H. Rusby on Limon Mountain, Guerrero, Mexico, July, 1910.

Numbers 3967–3974 represent the common olive, the fruit of *Olea europea* L. Native of Europe and cultivated in all warm regions.

3967. Olives on the branch.

3968. Ripe black olives. From the New York market.

3969. Commercial queen olives.

3970. Olives collected in June.

3971. Olives collected in July.

3972. Olives collected in August.

3973. Olives collected in September.

3974. A peculiar small variety of olive, sold in the market of Mexico City for medicinal use. It is bitter and slightly astringent. Acquired by H. H. Rusby.

THE POTATO FAMILY (*Solanaceae*)

3975. Sonora chillies.—The fruit of *Capsicum fastigiatum* Blume. Native of tropical South America and everywhere cultivated. Acquired in Nueva Laredo, Mexico, by H. H. Rusby, January, 1910.

3976. Chillies verdes. Green chillies.—Another variety of the same species. Acquired by Mrs. N. L. Britton in Mexico City, November, 1896.

3977. Red cherry pepper.—The fruit of *Capsicum cerasiformis* Mill. Native of tropical America and cultivated. Grown at Islip, New York.

3978. Long sweet pepper.—The fruit of a cultivated variety of *Capsicm annuum.* L. Native of tropical America and cultivated. From the trial grounds of P. Henderson & Company, Jersey City, New Jersey.

3979. Creole pepper.—Another variety of the same. Same source.

3980. Cuares inenos.—A Mexican cultivated variety of the same. Acquired by H. H. Rusby in the market of Mexico City, November, 1896.

3981. Giant Chinese pepper.—A cultivated variety of *C. annuum* known as "*C. grossum* L." Grown at Williamsbridge, New York, and presented by F. Wernick, October, 1904.

3982. Mexican large red pepper. Tornachile.—Another variety of the same species. Acquired by Mrs. N. L. Britton in Mexico City, November, 1896.

3983. Pimenta Moroni. Preserved sweet peppers.—A Spanish-grown variety of the same species, cooked and preserved. Presented by F. H. Leggett & Company, of New York.

3984. Peruvian cherry tomato or husk tomato. Tomatillo.—The fruiting branches of *Physalis peruviana* L. Native of South America and widely cultivated and naturalized. Collected by H. H. Rusby from cultivated plants at Balsillas, Colombia, August, 1917.

3985. The fruits of the preceding. Same locality and data.

3986. Sticky cherry tomato or ground cherry.—The fruiting branches of *Physalis viscosa* L. Native of North and South America and cultivated. Grown at Sparkhill, New York, and presented by Martin Ball, October 14, 1907.

3987. Mexican husk tomato or tomatillo.—The fruiting branches of *Physalis Ixocarpa* Brot. Native of Mexico and cultivated. Same source and donor as preceding.

3988. Tomatoes agnos.—Another specimen of the same. Acquired in the market of Mexico City, by H. H. Rusby, November, 1896.

3989. Small husk tomato or ground cherry.—The fruiting branches of *Physalis pruinosa* L. Native of North America. Grown at Sparkhill, New York, and presented by Martin Ball.

3990. Peruvian tree tomato.—The fruits of *Cyphomandra betacea* Sendt. Native of tropical America and cultivated. Grown in the conservatory of the New York Botanical Garden from seeds collected in Peru by A. L. de Lautreppe in 1900.

3991. Colombian wild tree tomato.—The fruit of "*Cyphomandra crassifolia*." Not edible. Native of South America and cultivated. Collected by H. H. Rusby in the state of Huila, Colombia, August, 1917.

3992. Another sample of the same. Same locality and collector.

3993. Tree tomato of Colombia.—The fruit of *Cyphomandra sycocarpa* Sendt. Native of Colombia. Collected by H. H. Rusby in Colombia, 1917.

3994–4000 are the fruits of cultivated forms of *Lycopersicum Lycopersicum* (L.) Karst. Native of tropical America and cultivated in a great number of varieties. Grown in the trial grounds of Henderson & Company at Jersey City, New Jersey, unless otherwise stated.

3994. Mikado tomato.

3995. Early ruby tomato.

3996. Dwarf purple tomato.

3997. Yellow pear tomato.—The yellow-fruited form of var. *pyriforme* of the same species.

3998. Red pear tomato.—The red-fruited form of a sub-variety of the preceding.

3999. Yellow plum tomato.—The yellow-fruited form of a sub-variety of the preceding.

4000. Red plum tomato.—The red-fruited form of the preceding.

4001. Mexican cultivated tomatoes.—A poor variety of tomato sold in the Mexican markets. Acquired by H. H. Rusby in Mexico City.

4002. Red peach tomato.—The red-fruited form of a cultivated variety of tomato, having a downy skin. Its botanical origin is doubtful.

4003. Yellow peach tomato.—The yellow-fruited form of the preceding.

4004. Pickled green tomatoes.—Presented by Mrs. H. H. Rusby.

4005. Canned tomatoes.—Tomatoes preserved by partial cooking and sealing. Same donor.

4006. Tomato ketchup. Same donor.

4007. Large purple egg-plant.—The fruit of *Solanum Melongenum* L. Native of Asia and everywhere cultivated. Grown by H. H. Rusby at Newark, New Jersey.

4008. Chinese scarlet egg-plant.—A variety of the preceding, originated in China. Grown by Martin Ball at Sparkhill, New York.

4009. Long purple egg-plant.—Another cultivated variety of the same. From the trial grounds of P. Henderson & Company.

4010. Snake egg-plant.—A variety of peculiar form. Grown by Martin Ball at Sparkhill, New York.

4011. Lulo.—The flowering branches of *Solanum quitoense* Lam. Native of northern South America and cultivated. Collected by H. H. Rusby near Neiva, Colombia, August, 1917.

4012. The fruit of the preceding. Acquired in the market of Bogota, Colombia, by H. H. Rusby, August, 1917.

4013. Wild lulo.—The fruiting branches of *Solanum sps.* Fruit little eaten. Collected near El Banco, Colombia, by H. H. Rusby, September, 1917.

4014. Pepino. Melon pear.—The fruit of *Solanum muricatum* Ait. Native of the Andean region, and cultivated. Acquired by H. H. Rusby in the market of Bogota, Colombia, August, 1917.

4015. Gooseberry tomato.—The fruit of a cultivated form of *Solanum nigrum* L. Native of North America. Grown by Martin Ball at Sparkhill, New York.

4016. Wonderberry.—The fruiting stems of a cultivated variety of *Solanum.* Grown by J. Lewis Childs at Floral Park, New York, July, 1909.

4017. Ripe fruits of the preceding. Same donor.

4018. Unicorn pods.—The fruits of *Martynia louisiana* Mill. (*Martyniaceae*—Unicorn-pod Family). Native of the southwestern United States and Mexico. Collected at the New York Botanical Garden, August 11, 1899. Used in pickles.

4019. Partridge-berry. Twin-berry. Snake-berry.—The fruit of *Mitchella repens* L. (*Rubiaceae*—Madder Family). Native of eastern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 15, 1919.

4020. Jagua. Genipa fruit. Marmalade berry.—The fruit of *Genipa americana* L. (*Rubiaceae*—Madder Family). Native of tropical America. Collected by Percy Wilson in Porto Rico, West Indies, in 1902.

4021. Black haw. Nanny-berry. Sheep-berry.—The flowering branches of *Virburnum Lentago* L. (*Caprifoliaceae*—Honeysukcle Family). Native of eastern and central North America. Collected by R. S. Williams in the New York Botanical Garden, May 2, 1919.

4022. The fruit of the same.

4023. Another species of the preceding.—The flowering branches of *Viburnum prunifolium* L. Native of the same region. Same locality and collector, May 14, 1919.

4024. The fruit of the same. Same locality and collector, November 2, 1919.

4025. The fruit of *V. cassinoides* L. Native of eastern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, September, 1919.

4026. High bush cranberry. Guelder rose.—The flowering branches of *Viburnum Opulus* L. Native of the north temperate zone, and cultivated for ornament. One of the snowball shrubs of the Garden. Collected by H. H. Rusby at Manchester, Vermont, October 5, 1912.

4027. Fruit of the preceding.—Collected in the New York Botanical Garden.

4028. Another specimen from the same source.

4029. Common black elderberry.—The fruit of *Sambucus canadensis* L. (Same Family). Native of eastern and central North America. Collected in the New York Botanical Garden by W. N. Clute, August 10, 1899.

4030. Western red elderberry.—The fruit of *Sambucus callicarpa* Greene. Native of northwestern North America. Collected by H. H. Rusby at Sieletz, Oregon, July, 1909.

4031. Blue elderberry.—The fruit of *Sambucus glauca* Nutt. Native of the Pacific slope. Collected by H. H. Rusby at Hornbrook, California, August, 1909.

4032. Mexican black elderberry.—The fruit of *Sambucus mexicana* Presl. Native of the southwestern United States and Mexico. Collected by H. H. Rusby in the San Bernardino Mountains, California, August, 1909.

THE GOURD FAMILY (*Cucurbitaceae*)

4033. Chayote blanco. White chow-chow. Pepinella.—The fruit of *Sechium edule* Sw. Native of the West Indies and cultivated. Acquired by Mrs. N. L. Britton in Mexico City, November, 1896.

4034. Another specimen of the preceding. Collected by P. Wilson, in Porto Rico, August, 1902.

4035. Prickly chayote.—A variety of the preceding with hispid fruit. Acquired by H. H. Rusby in Mexico, in 1909.

4036–4040, inclusive, represent cucumbers, the fruits of cultivated varieties of *Cucumis sativus* L. Native of Asia and everywhere cultivated. Grown on the trial grounds of P. Henderson & Company at Jersey City, New Jersey.

4036. Early white-spine cucumber.

4037. Extra early green prolific cucumber.

4038. Early prolific cucumber.

4039. Tender and true cucumber.

4040. Long green cucumber.

4041. Pickled gherkins.—A name applied to very small pickled fruits of any variety of cucumber. Presented by F. H. Leggett & Company, of New York.

4042. West Indian gherkins. Burr cucumber.—The fruit of *Cucumis Anguria* L. Native of the West Indies and cultivated. Same donor.

4043. Winter melon. European melon.—The fruit of a cultivated variety of *Cucumis Melo inodorus*. Native of Asia. Acquired by H. H. Rusby in the New York market.

4044. Honey-dew melon.—A choice cultivated variety of the preceding. Grown in California and acquired in the New York market by H. H. Rusby.

4045. Casaba melon.—Another choice variety of the same. Same source and donor.

4046. Canteloupe. Canteloupe muskmelon.—The fruit of cultivated plants of *C. Melo canteloupensis*. Acquired by H. H. Rusby in the New York market.

4047. Rocky Ford nutmeg muskmelon.—The fruit of a choice cultivated form of *C. Melo reticulata*. Acquired by H. H. Rusby in the New York market.

4048. Another type of the preceding. Same source and donor.

4049. Watermelon.—The fruit of *Citrullus Citrullus* (L.) Karst. Native of Asia and everywhere cultivated. Grown by H. H. Rusby at Newark, New Jersey.

4050. Citron. Preserving citron.—A cultivated variety of the preceding species. Grown at Nutley, New Jersey, by H. H. Rusby.

4051. Pepo Pepo (L.).—This is an original wild pumpkin, perhaps the origin of all the cultivated varieties. It is a native of the Lake Okechobee region of Florida, where it was discovered by J. K. Small in May, 1917, on the southern end and eastern shores of the lake, the sample being a part of the original collection.

Numbers 4051.1–4060 are cultivated varieties of pumpkin and squash supposed to be derived from the above.

4051.1. Seminole pumpkin or squash.—This variety, grown only by the Seminole Indians of Florida, appears to be the nearest to the original of all cultivated varieties and was probably the first variety cultivated. Acquired by J. K. Small near Miami, Florida, November, 1904.

4052. Cow pumpkin. New England pumpkin. Grown by H. H. Rusby at Newark, New Jersey.

4053. Canned pumpkin. Presented by H. H. Rusby.

4054. West Indian pumpkin. Acquired by H. H. Rusby in the New York market.

4055. Summer crookneck squash. Same source.

4056. Scalloped turban squash. Same source.

4057. Fordhook squash.—Grown on the trial grounds of P. Henderson and Company at Jersey City, New Jersey.

4058. Cocozela bush summer squash. Same source and donor.

4059. Delicate early squash. Same source and donor.

4060. Perfect gem squash. Same source and donor.

Numbers 4061–4064, inclusive, represent varieties of squash derived from *Pepo maximus* (Duchesne) Peterm. Native of Asia and widely cultivated.

4061. English vegetable marrow. Same source as the preceding.

4062. A larger variety of the preceding. Same source and donor.

4063. Green hubbard squash. Grown in the New York Botanical Garden.

4064. Yellow hubbard squash. Acquired by H. H. Rusby in New York.

4065. Pepino angola. Cassabanana. Cumba.—The fruit of *Sicana odorifera* Naud. Native of Brazil and cultivated. Used in preserves. Acquired by N. L. Britton in Porto Rico, West Indies.

4066. The same acquired by H. H. Rusby in the market of Bogota, Colombia, August, 1917.

Nuts, Dry Seeds, etc.

THE PINE FAMILY (*Pinaceae*)

4067. Pignolia nuts. Italian stone-pine seeds.—The cones of *Pinus Pinea* L. Native of the Mediterranean region. Presented by the Koerber Nutmeat Company, of New York.

4068. The nuts removed from the preceding. Same donor.

4069. The kernels removed from the preceding. Same donor.

4070. Pinones or pine nuts.—The nuts from the cones of a species of *Pinus*, probably *P. edulis* Engelm. Native of the Rocky Mountain region. Acquired by H. H. Rusby in Albuquerque, New Mexico, September, 1909.

4071. Pinones, or pine nuts, of the white-barked pine, *P. albicaulis* Engelm. Native of the northwestern United States and Canada. Collected at Union, Oregon, by W. C. Cusick, in 1906.

4072. Mexican pinones.—The nuts from a Mexican species of *Pinus*. Acquired by H. H. Rusby in Zamora, Mexico, February, 1910.

4073. Araucarian pinones.—The seeds of *Araucaria imbricata* Pavon. Native of Chile and Patagonia. They are an important staple food of the natives.

4074. Yin-hing (Silver Apricot). Pa-Koo. Ginkgo. The seeds of *Ginkgo biloba* L. (*Taxaceae*—Yew Family). Native of Asia and cultivated.

THE PALM FAMILY (*Palmae*)

4075. Coconut in husk. (See No. 441.)
4076. The same with husk removed.
4077. A half-husked coconut.
4078. Another specimen of the same.
4079. Dried kernels of the coconut.
4080. Dessicated coconut. After first passage through shredding machine. Presented by H. H. Rusby.
4081. The same after second passage through shredding machine, and screening. Same donor.
4082. The same after further grinding, and roasting. Same donor.
4083–4084. Pictures of coconut groves.
4085. Coquitos. Chilean baby coconuts.—The fruits of *Micrococus chilensis* (?). Native of Chile, and cultivated. Acquired in Bolivia, by R. S. Williams.
4086. An undetermined palm seed. Perhaps the preceding, in a young state.
4087. Pataua palm nuts.—The edible nuts of *Oenocarpus* sps. Collected by Weiss & Schmidt on the upper Rio Negro, Brazil.

THE WALNUT FAMILY (*Juglandaceae*)

4088. Leafy and fruiting branches of black walnut, *Juglans nigra* L. Native of eastern and central North America. Collected by R. S. Williams, in the New York Botanical Garden, September 18, 1919.
4089. The nuts of the preceding, in their husk. Same locality and collector.
4090. The same, with husk removed. Presented by the Koerber Nut-meat Co., of New York City.
4091. The kernels (seeds) of the same, removed from the shell. Same donor.
4092. Arizona black walnut.—The fruiting branches of *Juglans major* (Torr.) Heller. Native of the southwestern United States. Collected by H. H. Rusby in Johnson's Cañon, Arizona, August, 1909.
4093. Californian black walnut.—The fruiting branches of *Juglans californica* S. Watson. Native of California. Collected by H. H. Rusby at Monrovia, California, August 22, 1909.
4094. Colombian black walnut. The fruit of *Juglans granatensis* Linden. Native of the Colombian Andes. Collected by H. H. Rusby at Balsillas, Huila, Colombia, August, 1917.
4095. Butternut. Oil-nut. Lemon walnut. The fruiting branches of *Juglans cinerea* L. Native of eastern and central North America. Collected by H. H. Rusby at Little Falls, New Jersey.
4096. The preceding nuts in their husks. Same locality and donor.
4097. Another specimen of the same in the dry state.
4098. The same removed from the husks. Presented by the Koerber Nut-meat Company, of New York City.
4099. Picture of the butternut.
4100. Picture of trunk of same.
4101. English, or European, walnut.—Fruiting leafy branches of the cultivated form of *Juglans regia* L. Native of Europe and Asia and cultivated in all warm-temperate regions. Collected by H. H. Rusby at Redlands, California, August, 1909.

4102. The nuts of the same in the husks.
4103. The nuts of the preceding, removed from their husks. Same locality and donor.
4104. Another specimen of the same. Grown in China. Presented by C. W. Beebe, 1911.
4105. A very large-fruited variety of the same. From the Paris Exposition of 1900.
4106. Another specimen of the same. Grown in Italy.
4107. The nuts of the natural wild trees. Collected in Siantse, Thibet, and believed to be from wild trees. Presented by Robert T. Morris, of New York.
4108. Another specimen, from western Asia.
4109. The kernels (seeds) of English walnut, removed from their shells. Donated by the Koerber Nut-meat Co., of New York City.
4110. Shelled Spanish European walnuts.—Shelled European walnuts grown in Spain. Same donor.
4111. Shelled Bordeaux European walnuts.—Shelled European walnuts produced in Bordeaux. Same donor.
4112. White walnut. Shell-bark, or shag-bark, hickory. Sweet walnut. The fruiting leafy branches of *Hicoria ovata* (Mill.) Britton. Native of eastern and central North America.
4113. The nuts of the same, in their husks.
4114. The nuts removed from their husks. Collected by P. Wilson, at Orange, New Jersey.
4115. Another sample of the same. Donated by the Koerber Nut-meat Co., of New York.
4116. The kernels (seeds) of the same, removed from their shells. Same donor.
4117. Little shag-bark, or shell-bark, hickory. Balsam hickory. The fruit of *Hicoria microcarpa* (Nutt.) Raf. Native of the eastern and central United States. Collected in Bedford Park, New York, by P. Wilson in 1899.
4118. Bitter-nut. Bitter pignut.—The fruit of *Hicoria minima* (Marsh.) Britton. Native of the eastern United States.
4119. Pignut, or hognut, hickory. Black, or brown, hickory.—The fruiting leafy branches of *Hicoria glabra* (Mill.) Britton. Native of eastern and central North America. Collected by R. S. Williams in the New York Botanical Garden, September 18, 1919.
4120. The nuts of the preceding, in their husks.
4121. The same removed from their husks.
4121.1. Picture of *H. pallida* Ashe, regarded as a form of *H. glabra*.
4122. Bull-nut. King-nut. Mocker-nut. White-heart hickory (short-fruited form).—The fruiting leafy branches of *Hicoria alba* (L.) Britton. Native of eastern and central North America.
4123. The nuts of the preceding, in their husks.
4124. The same removed from the husks.
4125. Pecan. Soft-shelled hickory. Illinois nut.—The nuts, with some husks of *Hicoria Pecan* (Mill.) Britton. Native of the south-central United States. Donated by the Koerber Nut-meat Co., of New York City.
4126. The same removed from the husks, cleaned and polished. Same donor.
4127. The kernels (seeds) of the same, removed from their shells. Same donor.

4128. Schley pecans.—A choice thin-shelled cultivated variety of the preceding. Grown near Albany, Georgia, and donated by E. W. Given, of Newark, New Jersey.
4129. Van Deman pecan.—Another cultivated variety of the same. Same source and donor.
4130. Stewart pecan.—Another cultivated variety of the same. Same source and donor.
4131. Filbert. European hazelnut.—The fruits of *Corylus Avelana* L. (*Betulaceae* —Birch Family). Native of Europe and cultivated. Donated by the Koerber Nut-meat Co., of New York.
4132. The kernels (seeds) of the same, removed from their shells. Same donor.
4133. Shelled Spanish filberts.—Shelled filberts grown in Spain. Same donor.
4134. Shelled Turkish filberts.—Shelled filberts grown in Turkey. Same donor.
4135. American hazelnut.—Fruiting leafy branches of *Corylus americana* Walt. Native of eastern North America. Collected by H. H. Rusby at Oscawanna Lake, New York, September, 1918.
4136. The nuts of the same, in their husks. Same locality and donor.
4137. The same removed from the husks. Same source.
4138. Picture of the beaked hazelnut, *C. rostrata* Ait. Native of eastern North America.
4139. The fruiting leafy branches of the same. Collected by R. S. Williams in the New York Botanical Garden, September 13, 1919.
4139.1. The nuts of the same, freed from their husks.

THE BEECH FAMILY (*Fagaceae*)

4140. American chestnut.—Fruiting leafy branches of *Castanea dentata* (Marsh.) Borkh. Native of eastern and central North America. Collected in the New York Botanical Garden.
4141. Another sample of the same.
4142. The nuts of the same, removed from the tree. Same source.
4143. Paragon chestnut.—A large-fruited form of the preceding. Grown at Marlboro, New York, by James H. Staples.
4144. European, or Spanish, chestnut.—The nuts of *Castanea Castanea* (L.) Sudw. Native of Asia and Europe and cultivated. From the New York market.
4145. Another sample of the same. Grown at Aconcagua, Chile.
4146. Picture of the same species.
4147. Chinquapin. Dwarf chestnut.—Leafy fruiting branches of *Castanea pumila* (L.) Mill. Native of the southeastern United States.
4148. Nuts of the same, removed from the bur. Presented by S. B. Penick, of New York.
4149. False, or Californian, chestnut. Oak chestnut. Californian chinquapin. Fruiting leafy branches of *Castanopsis chrysophylla* A. DC. Native of California. Collected by H. H. Rusby at Mount Tamalpais, California, July, 1909.
4150. White oak. Stone oak.—The fruiting leafy branches of *Quercus alba* L. Native of eastern and central North America.

4151. The fruits (acorns) of the preceding. The fruits of *Q. Prinus* L. Native of eastern North America.

4152. Biotis. Emory's oak. Western white oak.—The fruits (acorns) of *Quercus Emoryi* Torr. Native of the southwestern United States and Mexico. Acquired at Torres, Sonora, Mexico, by D. T. MacDougal, February, 1902.

4153. Quinoa, or Kenoa dulce. Sweet Quinoa. Pettyrice.—The seed of *Chenopodium Quinoa* Willd. (*Chenopodiaceae*—Goosefoot Family). Native of the South American Andes, and the principal grain there cultivated and eaten. Acquired by R. S. Williams in Bolivia, in 1902.

4154. Another specimen of the same, from Chile.

4155. Quinoa dulce blanca. Bleached Quinoa.—The same, bleached white. From Peru.

4156. Canagua dulce.—Another name for the preceding. Grown in Bolivia. From the Pan-American Exposition at Buffalo, 1901.

4157. Salt-bush. Salt-grass.—The branches of a species of *Atriplex* (same family), from which the seeds have been removed.

4158. The grain threshed from the preceding.

4159. Spurry. Corn spurry. Beggars'-weed. Sand-weed.—The seeds of *Spergula arvensis* L. (*Alsinaceae*—Chickweed Family). Native of Europe and a widely distributed weed. Eaten to some extent.

4160. Lotus. Sacred Indian, or Egyptian, lotus. Egyptian bean. The fruiting torus of *Nelumbo Nelumbo* (L.) Karst. (*Nymphaeaceae*—Water-lily Family). Native of Asia and cultivated. Grown in the New York Botanical Garden.

4161. Another sample of the same.

4162. The fruits, or "nuts," of the preceding. Same source.

4163. The shelled kernels or seeds of the same. From the New York market.

4163.1. Another sample of the same.

4163.2. American lotus.—The fruiting inflorescence of *Nelumbo lutea* (Willd.) Pers. Native of the eastern and central United States. Grown in the New York Botanical Garden.

4164. Poppy seed. Maw seed.—The seed of *Papaver somniferum* L. (*Papaveraceae*—Poppy Family). Native of the Mediterranean region and cultivated. From the New York market.

THE PLUM FAMILY (*Amygdalaceae*)

Numbers 4165–4181 represent the sweet almond, the seed of *Amygdalus communis* L. Native of western Asia and cultivated in subtropical regions.

4165. Fruiting leafy branches of the sweet almond tree. Collected by H. H. Rusby at Redlands, California, August 24, 1909.

4166. California-grown sweet almonds. Donated by Lehn & Fink, of New York City.

4167. Jordan almonds in the shell. Same donor.

4168. The same, removed from the shell. Same donor.

4169. Commercial sweet almonds in the shell. From the Paris Exposition of 1900.

4170. Paper-shelled almonds.—A choice variety, with very thin shell. Same donor.

4171. Bleached sweet almonds.—The preceding, with the skins removed. Donated by Huyler & Co., of New York.
4172. The skins removed from the almonds by the preceding process.
4173. Shelled Alicante almonds. Same donor.
4174. Shelled Valencia almonds. Same donor.
4175. Shelled Spanish Valencia almonds.—Shelled Valencia almonds grown in Spain. Presented by T. M. Duchre & Sons, of New York.
4176. Shelled Sicily almonds. Same donor.
4177. Another sample of the same.—Presented by Huyler and Company, of New York.
4178. Shelled Spanish Jordan almonds.—Shelled Jordan almonds grown in Spain. Presented by T. M. Duchre & Sons, of New York.
4179. Shelled Italian Aetna almonds.—Shelled Aetna almonds grown in Italy. Same donor.
4180. Shelled Italian Avola almonds.—Shelled Avola almonds grown in Italy. Same donor.
4181. So-called Chinese sweet almonds.—Probably apricot kernels. From the New York market.
4182. Bitter almonds.—The seeds of *Amygdalus communis amara*. Native of the same region as the preceding and cultivated. Probably the preceding are merely cultivated derivatives of this. Acquired in the New York drug market.
4183. So-called small bitter almonds.—Probably peach kernels. From the New York market.

THE PEA FAMILY (*Fabaceae*)

4184. Vetch seeds. Ballen.—Probably the seeds of a species of *Vicia*. They are pounded into a meal that is used for soups and cakes.

Numbers 4185–4193, inclusive, are peas, representing the seeds of cultivated varieties of *Pisum sativum* L. Native of the Mediterranean region and cultivated in all temperate regions.

4185. Marrow-fat peas on the stem. Grown by H. H. Rusby at Newark, New Jersey.
4186. The same shelled from the pods.
4187. A variety of small peas. Grown at Chillan, Chile.
4188. Truparielas peas. From the same locality.
4189. French peas. Grown at the same place as the preceding.
4190. Fruiting branches of telephone peas. Grown by H. H. Rusby at Newark, New Jersey.
4191 Shelled telephone peas. Same source.
4192. A variety of pea grown at Elquiri, Chile.
4193. A large white pea. Grown at Angol, Chile.
4194. Wild, or hog, peanut.—The fruiting branches of *Falcata comosa* (L.) Kuntze. Native of eastern North America. Collected by H. H. Rusby at Upper Montclair, New Jersey, September 27, 1919.
4195. The underground seeds of the preceding. Same collection. Roasted and eaten like peanuts, or boiled for the table.

4196. Soy bean. Miso. Chauco bean. White gram.—Fruiting branches of *Soja soja* (L.) Native of eastern Asia and widely cultivated. Grown at the New York Botanical Garden.

4197. Black soy beans, shelled. Presented by H. H. Rusby.

4198. Small green soy beans. Presented by H. H. Rusby.

4199. Legumin, or vegetable casein, extracted from soy beans. Presented by the New York Laboratory of the United States Department of Agriculture.

4199.1. Another sample of the same. Presented by Merck & Company.

4200. Garbanzo. Gram. Chick pea. Egyptian, or coffee, pea.—The fruiting stems of *Cicer arietinum* L. Native of southern Europe and Asia. Grown by H. H. Rusby at Newark, New Jersey.

4201. The shelled seeds of the preceding. Acquired by L. M. Underwood at Porto Rico, West Indies, in 1901.

4202. Another specimen of the same. Grown at Colchagua, Chile.

4203. Another sample, grown in the Philippine Islands. Presented by E. B. Southwick.

4204. Pigeon pea. Congo pea. Dhal. Gandula.—Fruiting branches of *Cajan Cajan* (L.) Millsp. Native of the East Indies and cultivated in tropical countries. Collected by H. H. Rusby at Miami, Florida.

4205. Gandula.—The shelled seeds of the preceding. Acquired by L. M. Underwood at Porto Rico, July, 1901.

4206. Another specimen of the same. Same source.

4207. A white-seeded form of the same. Same source.

4208. Lorimuni. A pigeon pea. Acquired by D. T. MacDougal at Torres, Mexico.

4209. A red variety of the same. Same donor.

4210. Another sample of the same grown in the Philippine Islands. Presented by E. B. Southwick.

4210.1. Early buff cow pea. Presented by the United States Department of Agriculture.

4211. Horse bean. French broad bean. Habas.—Clusters of fruit of *Faba vulgaris* Moench. Native of Europe and Asia and widely cultivated. Acquired by H. H. Rusby in Trinidad, West Indies, May, 1896.

4212. Habas coloradas. Red broad bean.—A red-seeded variety of the preceding.

4213. Another specimen of the same. Grown at Chillan, Chile.

4214. A smaller variety of the same. Same locality.

4215. Habas tostados.—The preceding, roasted and sold as a dainty. Acquired by R. S. Williams in La Paz, Bolivia, in 1902.

4216. Lentils.—The fruiting branches of *Lens Lens* (L.) Lyons. Native of the Orient and widely cultivated. Grown by H. H. Rusby at Newark, New Jersey.

4217. The seeds of the same. From the New York market.

4218. Large white lupine.—Said to be the seeds of a cultivated variety of *Lupinus*. From the New York market. Presented by H. H. Rusby.

4219. Syrian lupines.

4220. Lupines.—The seeds of a cultivated variety of *Lupinus*. Poisonous unless soaked in water for several days.

4221. Yellow lupine.—Said to be the seeds of *Lupinus luteus* L. From the New York market.

4222. Chicharros. Grown in Santiago, Chile.

4223. Fenugreek. Foenum graecum.—The fruiting branches of *Trigonella Foenum-graecum* L. Native of western Asia and cultivated in tropical regions. Grown in the New York Botanical Garden.

4224. The commercial seeds of the preceding. From the New York drug market

4225. Another variety of the same. Same source.

4226. Egyptian bean. Black, or hyacinth, bean.—The fruiting branches of *Lablab Lablab* (L.) Lyons. Native of Africa and cultivated. Grown in the New York Botanical Garden.

4227. The seeds of the preceding.

4228. Lyon velvet bean.—The pods of a cultivated variety of *Stizolobium niveum.* Native of tropical America and cultivated. Collected by H. H. Rusby at Miami, Florida.

4229. The same from the Philippine Islands. Donated by E. B. Southwick.

4230. Another sample of the same. Grown in Florida.

4231. Jack bean.—The seeds of *Canavali ensiformis* DC. Native of tropical regions and cultivated. Collected by H. H. Rusby at Miami, Florida.

4232. Yam bean.—The fruiting stems of *Pachyrrhizus bulbosus* (L.) Britton. Native of tropical America and cultivated. Collected by H. H. Rusby at Miami, Florida.

Numbers 4233–4241 represent the Lima bean, *Phaseolus lunatus* L. Native of tropical America and cultivated in many varieties. Collected by H. H. Rusby on the trial grounds of P. Henderson & Co. at Jersey City, New Jersey.

4233. Fruiting stems of a small variety of Lima bean.

4234. Shelled beans of the preceding variety.

4235. Fruiting stems of a large variety of Lima bean.

4236. Shelled beans of the preceding variety.

4237. Fruiting stems of Dreer's bush Lima bean.

4238. Shelled beans of the preceding variety.

4239. Burpee's bush lima bean.

4240. Shelled beans of the preceding variety.

4241. Habas rubias.—A variety of the Lima bean that closely resembles the original wild form. Acquired by L. M. Underwood in Porto Rico, July, 1901.

Numbers 4244–4289 represent cultivated varieties of *Phaseolus vulgaris* L. Probably native of western Asia and everywhere cultivated in innumerable forms, both bush and climbing.

4244. Red kidney bean.—The fruiting stems. Grown by H. H. Rusby at Newark, New Jersey.

4245. The seeds of the preceding.

4246. White kidney bean.—The fruiting stems. Same source.

4247. The seeds of the preceding.

4247.1. Spurious white kidney beans. Often sold by New York seedsmen for the genuine.

4248. Marrow beans.—The fruiting stems. Same source.

4249. The seeds of the preceding.

4250. Navy bean.—The fruiting stems. Same source.

4251. Seeds of the preceding.
4252. Cranberry, or horticultural, beans.—The fruiting stems. Same source.
4253. The seeds of the preceding.
4254. A large bean, of superior quality, grown in Colombia, South America, and an important article of commerce there. Acquired by H. H. Rusby in the market of Barranquilla, August, 1917.
4255. Habachuelas.—A variety of bean grown in the West Indies. Acquired by L. M. Underwood in Porto Rico.
4256. Habachuelas colorados.—A red-seeded variety of the preceding.
4257. Tepari.—A bean acquired at Torres, Sonora, Mexico, by D. T. MacDougal, in February, 1902.
4258. Clavel bean. Grown at Ovalle, Chile.
4259. Vaca beans. (Cow beans.) Same locality.
4260. Stringless beans. Grown at Chillan, Chile.
4261. Clavellina beans. Grown at Elqui, Chile.
4262. Mono beans. (Monkey beans.) Grown at Ovalle, Chile.
4263. Angelitas beans. (Little Angel beans.) Grown at Elqui, Chile.
4264. A Philippine-grown sample. Presented by E. B. Southwick.
4265. Burricos beans. Grown at Santiago, Chile.
4266. Canarios beans. Grown at Chillan, Chile.
4267. Manteca beans. (Butter beans.) Grown at Argol, Chile.
4268. Rice beans. Grown at Chillan, Chile.
4269. Coscorones beans. Grown at Ranscagua, Chile.
4270. Gallaris beans. Grown at Chillan, Chile.
4271. White beans. Grown at Ovalle, Chile.
4272. The same grown at Santiago, Chile.
4273. Soissons beans. Grown at Ranscagua, Chile.
4274. Genino beans. Grown at Ovalle, Chile.
4275. Cercala beans. Grown at Chillan, Chile.
4276. Araucarios beans. Same locality.
4277. Mujos beans. Grown at Elqui, Chile.
4278. Cosacheros beans. (Harvest beans.) Grown at Elqui, Chile.
4279. Pondesador beans. Grown at Chillan, Chile.
4280. Gregorianos beans. From Chillan, Chile.
4281. Arvejilla beans. Grown at Angola, Chile.
4282. Yellow beans. Grown at Chillan, Chile.
4283. Flageolet beans. Grown at Chillan, Chile.
4284. Large bay beans. Grown at Santiago, Chile.
4285. Stringless bay beans. Grown at Angola, Chile.
4286. Small bay beans. Grown at Aconcagua, Chile.
4287. Large green beans. Grown at Elqui, Chile.
4288. Green beans. Grown at Ovalle, Chile.
4289. Avellitos beans. Grown at Chillan, Chile.
4290. Chinese small red bean. Mongo.—The fruiting stems of *Phaseolus Mungo* Blume. Native of China and largely cultivated in the Orient. Grown at the New York Botanical Garden.
4291. The commercial seeds of the preceding species. From the Chinese market of New York City. Presented by H. H. Rusby.

4292. Mongo. Batung.—Another sample of the preceding species. From Himalajan, Negros, Philippine Islands. Presented by E. B. Southwick.
4293. Another sample, from Jaro, Panay, Philippine Islands. Same donor.
4294. Another Philippine sample.
4295. Another sample from the same source.
4296. Another sample from Nagpontian, Ilicos Norte, Philippine Islands. Same donor.
4297. Another sample from Misamis, Mindanao, Philippine Islands. Same donor.
4298. Another sample from Paria, Iloilo, Philippine Islands. Same donor.
4299. Patani.—The seeds of *Phaseolus inamoemus* L. Native of the East Indies, and widely cultivated. From Bonam, Ilicos Norte, Philippine Islands. Same donor.
4300. Another sample from the same source.
4301. Another sample from Isabella de Luzon, Philippine Islands. Same donor.
4302. Philippine rice beans.—The seeds of *Phaseolus calcaratus* Roxb. Largely grown as food in the Philippine Islands. Same donor.
4303. Black Philippine rice beans.—A black-seeded variety of the same. Same source and donor.

Numbers 4304–4321, inclusive, represent the peanut, the fruit of *Arachis hypogaea* L. Native of tropical America and everywhere cultivated. Its food value is very similar to that of the bean and pea. About one half of its weight is fat, one fourth is albuminoid, and one eighth starch. In roasting, a part of the starch is changed to sugar and it becomes sweet, and other changes occur which tend to make it less digestible. It is more wholesome when boiled, or even eaten raw. The peanut is a very important food in many warm countries, being cooked in a great variety of ways, alone, in soups, and with meats. Much of the vegetable butter, or "nut butter," now sold is the fat of the peanut. Enormous amounts of the poorer grades of this fat are used for soap-making. The flower of the peanut is produced above ground, after which the young pods burrow into the soil to grow and ripen. Numbers 4306–4324 were presented by James Chieves, of New York City, unless otherwise stated.

4304. Virginia peanuts. Presented by A. N. Hawkes, of New York.
4305. Fruiting plants of the preceding variety. Presented by T. H. Birdsong, of Suffolk, Virginia.

4306. Spanish peanut, in the shell.
4307. The same, shelled, No. 1.
4308. The same, No. 2.
4309. Fruiting plants of the preceding variety. Grown in Virginia and presented by T. H. Birdsong, of Suffolk, Virginia.
4310. Tennessee peanuts in the shell.
4311. Virginia Jumbo peanuts, in the shell.
4312. Commercial Virginia peanuts in the shell.
4313. Extra large Virginia shelled peanuts.
4314. No. 1 shelled Virginia peanuts.
4315. No. 2 shelled Virginia peanuts.
4316. North Carolina peanuts, in the shell.
4317. The same shelled.
4318. Large Java peanuts, in the shell.
4319. Small Java peanuts in the shell.
4320. Shelled Java peantus.
4321. Shelled Chinese peanuts. Presented by H. H. Rusby. From the New York market.
4322. Peanut butter.
4323. Peanut oil.—The fixed oil expressed from peanuts by the cold process.
4324. Picture of the peanut plant, showing the peculiar mode of growth of its fruit.

THE SUMAC FAMILY (*Anacardiaceae*)

4325. Cashew nuts in the shell.—The fruits of *Anacardium occidentale* L. (See No. 2713). Acquired by Mrs. N. L. Britton at Santiago, Cuba, in 1902.
4326. The kernels (seeds) of the preceding, slightly roasted for use as a dessert. From the New York market.
4327. The same, more thoroughly roasted. Same source.
4328. Pistacia nuts.—The fruits of *Pistacia vera* L. Native of southern Europe and Asia and cultivated. Some are shelled, others in the shell. Presented by Mrs. Sayd Mikel Albestany, of Yonkers, New York.
4329. Another sample of the same. From the Paris Exposition of 1900.
4330. The same shelled for use as a dessert. Presented by Huyler and Company, of New York City.
4331. The shells removed from the preceding.
4332. Picture of a fruiting branch of the same.

4333. Souari, or Swarri, nuts.—The fruits of *Caryocar nuciferum* L. (*Caryocaraceae*—Souari-nut Family). Native of northern South America. Purchased by H. H. Rusby in the New York market.
4334. Picture of a flowering branch of the preceding.
4335. Brazil, or Para, nut. Cream-nut. Nigger-toe. Castanha.—The fruit of *Bertholletia excelsa* Humb. & Bonpl. (*Lecythidaceae*—Monkey-nut Family). Native of tropical America. Presented by the Koerber Nut-meat Company, of New York City.
4336. The nuts (seeds) from the preceding. Same donor.
4337. The kernels removed from the preceding. Same donor.

4338–4340. A series of pictures illustrating the leafy and flowering branches of the preceding species.

4341. Paradise nuts. Sapucaya. Monkey-nuts. Cream-nuts.—The seeds of *Lecythis Zabucajo* Aublet. (Same family.) Native of the same region as the preceding and more to the eastward. Acquired in the New York market by H. H. Rusby.

4342. Pod in which the preceding seeds grew.

4343. Almendras. West Indian almonds.—The fruits of *Terminalia Catappa* L. (*Combretaceae*—Combretum Family). Native of tropical regions and cultivated. Acquired by J. K. Small at Miami, Florida.

4344. Another sample of the same. Acquired by H. H. Rusby at Key West, Florida.

4345. Picture illustrating the leaves and flowers of the preceding.

4346. Black teel seeds. Sesame seeds. Benne seeds.—The seeds of the black-seeded form of *Sesamum indicum* L. (*Pedaliaceae*—Benne-seed Family). Native of southern Asia and cultivated in tropical regions. Presented by Boustead and Company, of Singapore.

4347. Another sample of the same from the Philippine Islands. Presented by E. B. Southwick.

4348. Ajoujola sesame. Same locality and donor.

4349. Red sesame seed. Same source and donor.

4350. A mixed sample from the same locality. Same donor.

4351. White benne seed.—The seed of the white-seeded form of the preceding species. Same source and donor.

4352. Kow Kliep cakes.—Cakes made of teel seed and rice flour. From Siam.

4353. Flea seed. Psyllium.—The seed of *Plantago Psyllium* L. (*Plantaginaceae*—Plantain Family). Native of the Mediterranean region. From the New York drug market. Presented by H. H. Rusby.

4354. Pumpkin seed.—The seed of *Pepo Pepo* (See No. 4051).

4355. Calabazo colorado seed. Red pumpkin seed.—A sample of pumpkin seed from the Philippine Islands. Presented by E. B. Southwick.

4356. Watermelon seed (See No. 4049).

Bird Foods

Presented by the Philadelphia Bird Food Company, of Philadelphia.

4357. Unshelled rice.—The grain of *Oryza sativa* L. (*Gramineae*—Grass Family), within its hull. Native of southern Asia and everywhere cultivated.

4358. German millet. Hungarian, or golden, millet.—The grain of *Chaetochloa italica* (L.) Scribner (Same family). Native of Asia and widely cultivated for its grain and hay. Grown in Germany.

4359. French millet.—The preceding, grown in France.

4360. Canary seed. Alpic.—The grain of *Phalaris canariensis* L. (Same family). Native of South America and cultivated and naturalized in many countries.

4361. Hemp seed.—The fruit, or grain, of *Cannabis sativa* L. (See No. 550.)

4362. Rape seed. (See No. 1524.)

4363. May seed. Poppy seed.—The seed of *Papaver somniferum* L. (See No. 1517)

4364. American sunflower seed.—The fruit of *Helianthus annuus* L. (*Carduaceae* —Thistle Family). Native of America and widely cultivated. Grown in America.

4365. Russian sunflower seed.—The preceding, grown in Russia.

4366. Mixed bird food.—A mixture of various seeds for the feeding of song-birds.

Cereals and Other Grains

Numbers 4367–4447 comprise various varieties and products of maize, or Indian corn, the grain of *Zea Mays* L. (*Gramineae*—Grass Family). Native of tropical America and now cultivated in all tropical and warm-temperate regions. The group comprises four general divisions, each with various sub-divisions.

A. Aboriginal forms. These are cultivated by primitive peoples in the native regions of the plant, and exhibit the smallest degree of development from the early, or original, form. They are largely used for parching.

B. Field-corns. These are the coarser varieties, containing much starch and relatively little sugar, and used for grinding.

C. Pop-corns. These have small ears and kernels and are used for popping.

D. Sweet, or sugar, corns. These contain much sugar and relatively little starch, and the grain shrivels or wrinkles in drying. They are raised for use on the table, in the unripe state.

As a rule, varieties of corn developed and grown in hot, moist countries have longer and narrower kernels and more rows upon the ear. The grain is softer, but has a stronger and tougher covering.

Group A

4367. A yellow, rather hard variety, grown in the South American Andes at high altitudes and mostly used for grinding. Acquired by R. S. Williams, in Bolivia, in 1902.

4368. A soft white variety grown in the same region, and largely used for parching, in which condition it is the principal food carried by the natives on their journeys. Same source and donor.

4369. Another soft white variety, used almost exclusively for parching. Same source and donor.

4370. Maiz negro tostado. (Parched black corn.)—A soft black variety used for parching, in the parched state. Same source and donor.
4371. A form grown in Peru and largely used there for parching. Acquired in Peru by A. De Lautreppe.
4372. Choclos.—The Aymara Indian name for a variegated Andean variety used on the table as a sugar-corn and largely cooked in soups. Acquired in Bolivia by R. S. Williams in 1902.
4373. A red-black Bolivian variety, used for grinding. Same source and donor.
4374. A variety grown in Indiana, the original seed said to have been exhumed in an Indian mound in Arkansas. Presented by C. F. Vray, February, 1897.

GROUP B

4375. Kukukurudza Polska flint corn.—Specimen from Kansas State Agricultural College, through H. F. Roberts, of Manhattan, Kansas.
4376. Sanford's white flint corn.—Grown and presented by Martin Ball, of Sparkhill, New York, October, 1906.
4377. Extra long ears of white flint corn.
4378. A white flint corn grown at Piot, Luzon, Philippine Islands. Presented by E. B. Southwick.
4379. Another sample of the same, grown at Juban, Luzon. Same donor.
4380. A peculiar yellow flint corn. Grown at Ilicos Norte, Philippine Islands. Presented by E. B. Southwick.
4381. Compton's early flint corn. Grown and presented by Martin Ball, of Sparkhill, New York, October, 1906.
4382. Yellow flint corn. Grown at the New York Botanical Garden.
4383. Small Canada yellow flint corn.
4384—4385.
4386. Yellow flint corn.—Grown on Cat Island, Jamaica, and acquired by N. L. Britton in 1907.
4387. Arlington mixed yellow flint corn. Grown in the New York Botanical Garden.
4388. Eight-rowed yellow flint corn. Grown at the New York Botanical Garden.
4389. King Philip red flint corn. Grown by Martin Ball at Sparkhill, New York.
4390. A yellow flint corn grown at Balusan, Luzon, Philippine Islands. Presented by E B. Southwick..
4391. Another, from Alcola, Luzon. Same donor.
4392. Champion kiln-dried samp.—The grains of corn, hulled and coarsely broken to be boiled for food. Presented by F. H. Leggett & Company, of New York.
4393. Kiln-dried hominy.—The grains of corn, hulled and finely broken, to be boiled for food. Same donor.
4394. Corn flour. The finely ground and sifted grains of corn. Same donor.
4395. Pinole de Maiz. Corn meal.—Made at Torres, Mexico, and acquired by D. T. MacDougal.
4396. Champion white pearl dent corn.—Grown and presented by Martin Ball, of Sparkhill, New York.
4397. Queen of the Earlies dent corn.
4398. Rocky Mountain white dent corn.

4399. Early white dent corn.
4400. Boone County white dent corn.
4401. Improved mastodon dent corn. Same donor.
4402. No. 2 white dent corn. Presented by the New York Produce Exchange.
4403. White granulated corn meal. Presented by F. H. Leggett & Company, of New York.
4404. Bolted white meal. Same donor.
4405. Reeds yellow dent corn. Presented by H. F. Roberts, of Manhattan, Kansas.
4406. Golden standard Leming dent corn. Same donor.
4407. Funk's ninety-day yellow dent corn. Same donor.
4408. Long Island yellow dent corn.
4409. No. 2 yellow dent corn. Presented by the New York Produce Exchange.
4410. Bolted yellow corn meal. Presented by F. H. Leggett & Company, of New York.
4411. Granulated yellow corn meal. Same donor.
4412. Improved calico dent corn. Presented by H. F. Roberts, of Manhattan, Kansas.
4413. No. 2 mixed dent corn. Presented by the New York Produce Exchange.

GROUP C

4414. Mixture of varieties of pop-corn.
4415. Pop-corn. Commercial sample acquired by H. H. Rusby in the New York market.
4416. Golden rice pop-corn.

Numbers 4416–4444, unless otherwise specified, were grown and presented by Martin Ball, of Sparkhill, New York.

4417. White rice pop-corn.
4418. Red rice pop-corn.
4419. Another sample of the same.
4420. Red pop-corn. Commercial sample from New York market. Presented by H. H. Rusby.
4421. Striped and variegated rice pop-corn.
4422. Mapledale prolific pop-corn.
4423. Pop-corn. Commercial sample from New York market.
4424. Queen golden pop-corn.
4425. Black pop-corn.
4426. Variegated pop-corn.
4426. 1. Popped pop-corn, caused to burst open by heating.
4426. 2. The same, moistened with syrup and formed into balls.

GROUP D

4427. Country gentleman sweet corn.
4428. Late mammoth sweet corn.
4429. Hickox improved sweet corn.
4430. Shaker's early sweet corn.
4431. Minnesota sweet corn.
4432. Stowell's evergreen sweet corn.

4433. Early evergreen sweet corn.
4434. Early mammoth sweet corn.
4435. Potter's excelsior sweet corn.
4436. Crosby twelve-rowed sweet corn.
4437. Early Narragansett sweet corn.
4438. Henderson's early metropolitan sweet corn.
4439. Cosmopolitan sweet corn.
4440. Early Fordhook sweet corn.
4441. Marblehead sweet corn.
4442. Moore's colored sweet corn.
4443. Perry's hybrid sweet corn.
4444. Melrose sweet corn.
4445. Early red sweet corn.
4446. Light red sweet corn.
4447. Golden bantam sweet corn. Grown and presented by H. H. Rusby, of Newark, New Jersey.
4448. Millo maize.—The fruiting tops of a cultivated variety of *Holcus Sorghum* L. (*Gramineae*—Grass Family). Cultivated for its grain. Native of the Old World tropics and the staple cereal food of a large part of the human race. Grown and presented by Martin Ball, of Sparkhill, New York.
4449. Kaffir corn. Dhouro. Guinea corn.—Another variety of the preceding. Same source.
4450. Another variety of the same. Acquired by N. L. Britton on the Island of Curaçoa.
4451. Another sample of the same. Acquired by L. M. Underwood in Porto Rico, West Indies.
4452. Black Philippine sorghum seeds.—The seeds of *Holcus saccharatus* L. (*Gramineae*—Grass Family). Cultivated in the Philippine Islands. Presented by E. B. Southwick.
4453. Red Philippine sorghum seeds. A red variety of the preceding. Same source and donor.
4454. Another sample from Costillo, Sorsogon, Luzon.
4455. Philippine millet. Mijo. An edible seed or grain of undetermined botanical origin. Philippine Islands. Presented by E. B. Southwick.

Rice

Rice is the grain of *Oryza sativa* L., of the grass family (*Gramineae*), native of southern Asia and cultivated in all tropical and warm-temperate regions. It is naturally a marsh-plant, growing during a part of its life wholly or partially submerged by water. Under cultivation, it is largely grown so as to supply these conditions, the ground being artificially flooded at suitable times. This form of rice is known as "Lowland," and of it there are many cultivated varieties. By selection and breeding, another

form of the plant has been developed, which is capable of growing in ordinary dry soil. This is known as "Upland" and of it also there are many cultivated varieties.

Rice differs from other grains in being completely and closely enclosed in its husk or hull, which must be broken before it can be removed. This is a far more difficult process than the ordinary winnowing of other grains, and has led to the invention of special machinery, the process being usually performed, in this country, in factories to which the crude rice is taken for that purpose. It is thus possible for the entire industry of rice production to be controlled in any given district by a combination among these millers, especially if the price of imported rice is increased by a tariff.

After the removal of the hull, the rice is usually subject to a polishing process, by which the outer layers are ground off. This not only gives the rice a more showy appearance, but it removes the eggs of a fly deposited in the surface of the grains of most rice, which would otherwise hatch out before the rice is used. This process removes the most nutritious portion of the grain.

As a food, rice is far less nutritious than other grains. It contains a very large percentage of starch, but little of the more valuable nutrients, fats and albuminoids. This is largely due to the removal of the outer layers in polishing. In oriental countries, in many of which rice is the chief food, this treatment is rarely employed, the rice being consumed before the insects have time to hatch.

4456. Upland rice on the stalk. Grown at Banos, San Vicente, Cuba. Acquired by N. L. Britton, September 16, 1910.

4457. Kelijira.—A variety of rice grown in Burmah. Presented by C. C. Curtis.

Numbers 4458–4675 comprise a collection of samples of rice grown in the Philippine Islands, and presented by E. B. Southwick.

4458. Uban rice.
4459. Saganay rice.
4460. Mocanay rice.
4461. Ampepit rice.
4462. Binggala rice.
4463. Binon doc rice.
4464. Na Lahl rice.
4465. Cacayan Luzon rice.
4466. Quinastila rice.
4467. An unnamed rice.
4468. Palay rice.
4469. Bulic rice.

4470. Batingan rice.
4471. Pilit-Tapol rice.
4472. An unnamed rice.
4473. Pelit rice.
4474. An unnamed rice.
4475. An unnamed rice.
4476. Arabon rice.
4477. Inaguco rice.
4478. Tinintang-Anot rice.
4479. An unnamed rice.
4480. Hanam-An rice.
4481. Cananam rice.
4482. Malaguit rice.
4483. Kumkumguac rice.
4484. Parirutong rice.
4485. Tapocoy rice.
4486. Tapul rice.
4487. Bintazan rice.
4488. Catacuag rice.
4489. Banlang rice.
4490. Kapilit rice.
4491. Kapilit rice.
4492. Malayoza rice.
4493. An unnamed rice.
4494. An unnamed rice.
4495. Simmobang rice.
4496. Sularum rice.
4497. Bayugnon rice.
4498. Indorang rice.
4499. Palogbloab rice.
4500. Bolac rice.
4501. An unnamed rice.
4502. Paeay rice.
4503. Birajo rice.
4504. Palay San-Juan rice.
4505. Kotchinam rice.
4506. Casare rice.
4507. Case rice.
4508. Kinastila rice.
4509. An unnamed rice.
4510. Molido rice.
4511. An unnamed rice.
4512. Malaganit rice.
4513. Cenarne rice.
4514. Ycogan rice.
4515. Dayome rice.
4516. Pinitogo rice.
4517. Inoay rice.
4518. Minaniciling rice.
4519. An unnamed rice.
4520. An unnamed rice.
4521. Manogbaleo rice.
4522. Binac-hao rice.
4523. Cabujo rice.
4524. Bagongtano rice.
4525. Cabagbag rice.
4526. Gamay rice.
4527. Sinantiago rice.
4528. Quinarne rice.
4529. Buracnaga rice.
4530. Pulaosa rice.
4531. Pula rice.
4532. Palay-Bakao-Cocoran rice.
4533. Manabaco rice.
4534. Cabusgan rice.
4535. Panagaro rice.
4536. Tapados rice.
4537. Binoc-Lao rice.
4538. An unnamed rice.
4539. Malagquit rice.
4540. Putian rice.
4541. Kinalaban rice.
4542. An unnamed rice.
4543. An unnamed rice.
4544. An unnamed rice.
4545. Olbayanon rice.
4546. Pinangdon rice.
4547. Ginaroan rice.
4548. Bolohang rice.
4549. Malajay rice.
4550. Binae-hao rice.
4551. Quinabeve rice.
4552. Bumalvan rice.
4553. Sangasio rice.
4554. An unnamed rice.
4555. An unnamed rice.
4556. Ramilletes rice.
4557. Urboc rice.
4558. An unnamed rice.
4559. Maraquit rice.
4560. Macabebe rice.
4561. Pinili-Puti rice.
4562. Malagquit rice.
4563. An unnamed rice.
4564. Cabalas rice.
4565. An unnamed rice.

4566. Capisnon rice.
4567. An unnamed rice.
4568. Inagras rice.
4569. Jodilot rice.
4570. An unnamed rice.
4571. Asae-upon rice.
4572. Maguem-os rice.
4573. Memes rice.
4574. Cala-as rice.
4575. An unnamed rice.
4576. Cachan rice.
4577. An unnamed rice.
4578. Kapilit rice.
4579. Bimagasay rice.
4580. Carog rice.
4581. An unnamed rice.
4582. Katioos rice.
4583. Quinadios rice.
4584. Ca-ongcoy rice.
4585. Magraog rice.
4586. Cadacag rice.
4587. Bulzac-Sa-Biga rice.
4588. Malagquit-guniarne rice.
4589. An unnamed rice.
4590. Ontrame rice.
4591. An unnamed rice.
4592. Magano rice.
4593. Caluboa rice.
4594. Hamticanon rice.
4595. Carimayan rice.
4596. Bacoludnon rice.
4597. An unnamed rice.
4598. An unnamed rice.
4599. Quinaslila rice.
4600. An unnamed rice.
4601. Magsanaya rice.
4602. Diamante rice.
4603. Biday rice.
4604. Corbonay rice.
4605. Capagno rice.
4606. Maiz rice.
4607. Pinili rice.
4608. Nagbatoc rice.
4609. Catorsa rice.
4610. Lubang rice.
4611. Binagacay rice.
4612. Burirao rice.
4613. Malido rice.
4614. Tabocanon rice.
4615. Binorirao rice.
4616. Bacjao rice.
4617. Bigun rice.
4618. Matabia rice.
4619. Kinaraboa rice.
4620. An unnamed rice.
4621. Guiri-guiri rice.
4622. Bolohang-gap-gap rice.
4623. Macan rice.
4624. Tanda-yaganon rice.
4625. Camanang rice.
4626. Pinili. Riga. Tudtanan rice.
4627. Capas rice.
4628. An unnamed rice.
4629. An unnamed rice.
4630. Lurang rice.
4631. An unnamed rice.
4632. Magna-puti rice.
4633. Mot-Mot rice.
4634. Sinampay-cacop rice.
4635. Talay-Massgaragul rice.
4636. An unnamed rice.
4637. Daguios rice.
4638. Guirabot rice.
4639. Binggala rice.
4640. Cubinay rice.
4641. Rupo Yosae rice.
4642. Sinanca rice.
4643. Madalina rice.
4644. Catocong rice.
4645. An unnamed rice.
4646. An unnamed rice.
4647. Dicalut rice.
4648. Kachure rice.
4649. An unnamed rice.
4650. Binatu rice.
4651. Mimas rice.
4652. An unnamed rice.
4653. Binacroy rice.
4654. An unnamed rice.
4655. Ganado-blanco rice.
4656. Buntayog rice.
4657. An unnamed rice.
4658. An unnamed rice.
4659. Cabitena rice.
4660. Kalabaga rice.
4661. Sarayray rice.

4662. Banata rice.
4663. An unnamed rice.
4664. An unnamed rice.
4665. Cavitena rice.
4666. Matayosa rice.
4667. Magano rice.
4668. Sida rice.
4669. Bantur rice.
4670. An unnamed rice.
4671. Malac rice.
4672. An unnamed rice.
4673. An unnamed rice.
4674. An unnamed rice.
4675. A pink rice, without name.
4676. Samudrabali. A variety of rice grown in Burmah. Presented by C. C. Curtis.

Numbers 4677–4681 are other varieties of rice grown in Burmah and presented by C. C. Curtis.

4682. Lowland rice. Acquired by H. H. Rusby near Savannah, Georgia.
4683. Rice hulls.—The hulls removed from the raw grain to prepare it for the market.
4684. Ordinary domestic cleaned rice.—Presented by F. H. Leggett & Company, of New York.
4685. Patria rice.—Grown in Patria, India. Same donor as preceding.
4686. Commercial rice grown in Japan. Same donor as preceding.
4687. Flaked rice. Same donor as preceding.
4688. Rice flour. Rice in a finely ground state. Same donor.
4689. Popped rice. Rice grain crisp. Rice grains popped by heating in a closed container, under high pressure. Acquired in the New York market.
4690. Wild rice on the stalk.—The grain of *Zizania aquatica* L. Same family. Native of eastern and northern North America, growing in shallow water. An important aboriginal food.

Oats

Oats are the grains of *Avena sativa* L., of the grass family, native of Europe and Asia and cultivated in all cool and temperate regions. Although principally used as a fodder, especially for horses, these grains, when deprived of their chaffy portions, constitute a very nutritious and wholesome human food. They are less rich in starch than most cereals, but contain much fat and albuminoid matter.

4691. Oats on the stalk.—The tops of the ripened plant, bearing the grain.
4692. No. 1 commercial oats, as graded by the New York Produce Exchange, the donor of the sample and of Nos. 4693–4697.
4693. No. 1 clipped commercial oats.—No. 1 oats from which the sharp, stiff points have been clipped off.
4694. No. 2 commercial oats.
4695. Clipped No. 2 commercial oats.
4696. No. 2 commercial white oats.
4697. Clipped No. 2 commercial white oats.
4698. Manitoba cleaned oats.—Grown in Manitoba, Canada, and presented by the Manitoba Commissioners to the Pan American Exposition at Buffalo, New York.

4699. Black oats.—A very dark-colored variety. Grown in California and presented by Ernest Kreusch, of New York City.
4700. Oat meal.—A meal produced by coarsely grinding the hulled grain of oats. Presented by F. H. Leggett & Co., of New York City.
4701. Oat flakes.—A product of the same general character as the preceding. Same donor.
4702. Oat groats.—Another product of the same nature. Same donor.

Rye

The grain of *Secale cereale* L., of the grass family, native of southern Europe and central Asia, and cultivated in all temperate regions. It is usually grown as a winter annual, that is, planted in the late summer, allowed to rest during the winter, and mature the next summer. Thus grown, it is known as "winter rye." When planted in the spring and harvested the same season it is called "spring rye." There are a number of varieties specially adapted to each of these modes of culture.

4703. Rye on the stalk. The tops of the mature plant, bearing grain.
4704. No. 1 commercial rye, as classified by the New York Produce Exchange, the donor of the sample.
4705. No. 2 commercial rye.

Wheat

The ordinary wheat of commerce is the grain of *Triticum sativum* L., of the grass family, native of the Mediterranean region and cultivated in all temperate regions. It presents a number of quite distinct forms or separate species, with different useful properties and grown for different purposes. Of each of these races there are many cultivated varieties, produced by selection and breeding, and by hybridization.

Besides the above, there are two distinct species, *T. monococcum* L. and *T. polonicum* L., which are cultivated to a very small extent.

Ordinary wheat is mostly grown as a winter annual, "winter wheat," but also largely as "spring wheat." (See explanation under rye.)

Wheat in its original form possesses long awns to its glumes, commonly called the "beard," which are very

annoying and inconvenient to the growers and threshers. This form is known as "bearded wheat." It has now been largely replaced in cultivation by "beardless" varieties, in which these awns are wanting or very short.

Wheat is the most wholesome, valuable, and important of all the grains. It possesses a very satisfactory ratio of nutritive ingredients, being especially rich in protein and containing considerable phosphorus. The more intelligent races and nations subsist largely on wheat.

4706. Common wheat (*Triticum sativum* L.)—Excavated from the buried Egyptian temple of Halshepset at Der-el Bahari, Upper Egypt, in 1893 and supposed to have been there since 1600 B.C. Presented by Miss Anna Murray Vail, in 1898.

4707. The container in which the preceding was received.

4708. Bearded red wheat on the stalk.—A variety of *Triticum sativum* L. with a reddish grain and possessing long awns.

4709. Bearded white wheat on the stalk.—The same as the preceding, but the grain of a light color.

4710. Beardless red wheat on the stalk.—The same as No. 4708 but without the long awns.

4711. Beardless white wheat.—Wheat threshed from the stalk, but the chaff and impurities still remaining mixed with the grain.

4712.

4713. No. 1 commercial white wheat, as classified by the New York Produce Exchange.

4714. No. 1 commercial white winter wheat.

4715. No. 1 commercial hard spring wheat.

4716. No. 1 commercial northern spring wheat.

4717. Extra red winter wheat.

4718. No. 2 commercial red winter wheat.

4719. No. 2 commercial red spring wheat.

4720. Walla-Walla red wheat. Grown in the state of Washington.

4721. Tartarian wheat.—The grain of *Triticum tartaricum*. Grown in the Philippine Islands. Presented by E. B. Southwick.

4722–4729 are manufactured products of wheat, presented by F. H. Leggett & Company, of New York City.

4722. Cracked white wheat.—Wheat coarsely broken up by passing through rollers.

4723. Crushed white wheat.—Wheat crushed flat by passing through rollers.

4724. Wheat flakes.—A product similar to the preceding.

4725. Germea.—The inner portion of the wheat grain, containing the embryo.

4726. White wheat farina.—A coarse soft wheat flour or meal.

4727. Graham flour.—Wheat flour in which the shell of the grain is ground with the kernel.

4728. Whole wheat flour.—Wheat flour made by grinding up the entire grain.

4729. Ordinary wheat flour.—Finely ground wheat from which the shells are wholly sifted or "bolted" out.
4730. Wheat pinole.—A coarse native flour made by the natives of Mexico. Acquired by D. T. MacDougal at Torres, Sonora, Mexico, February, 1902.
4731. Green kern.—Wheat gathered while immature. Chiefly used as an ingredient of soups. From the New York market. Presented by H. H. Rusby.
4732. Another specimen of the same. Presented by F. H. Leggett & Company.

Hard Flint, or Macaroni, Wheat ("*T. durum*" Desf.)

4733. Italian hard wheat (*Triticum durum*) on the stalk. Grown in Italy. Specially rich in albuminoids, and used particularly for the manufacture of macaroni.
4734. The same separated from the stalk and cleaned.
4735. *T. durum*, var. *Belotwika*. Presented by the United States Department of Agriculture.
4736. Macaroni of first quality.
4737. Macaroni of second quality.
4738. Vermicelli of first quality.
4739. Vermicelli of second quality.
4740. Vegetable albumin extracted from wheat, consisting of 94 per cent. albumin.
4741. Gluten flour. The starch has been removed. Presented by the Jireh Food Company, of New York.
4742. Dwarf wheat on the stalk.—A variety of *T. sativum* especially adapted to dry and mountainous regions.
4743. The same threshed and cleaned.
4744. Emmers wheat on the stalk.—A race of *T. sativum* (*T. dicoccum* Schrank) grown chiefly in southern Europe for mush and as a source of starch.
4745. The same threshed and cleaned.
4746. Spelt on the stalk.—A race of *T. sativum* ("*T. speltum*" L.) now but little grown, in southern Europe.
4747. The cleaned grain of the preceding.
4748. One-grained wheat, on the stalk. *Triticum monococcum* L. Native of southern Europe and now little cultivated, for use in mush and as a source of starch.
4749. The same threshed and cleaned.
4750. Poulard wheat.—The fruiting heads of *Triticum turgidum*, var. *titanicum*. Presented by the United States Department of Agriculture.
4751. The cleaned grain of the preceding. Same donor.
4752. Polish wheat on the stalk. *Triticum polonicum* L. Native of southern Europe and now grown to a slight extent, chiefly in Spain.
4753. The same threshed and cleaned.

Barley

Barley is the grain of *Hordeum vulgare* L., of the grass family, native of western Asia and now cultivated in all except warm countries. Several of its forms have received

specific names, but all are regarded as forms of the above species. Barley is chiefly used in brewing and as a fodder, but it is rich in nutriment and in the form of "pearl barley" it is largely used in soups and gruels.

4754. Two-rowed barley on the stalk.—A variety of *H. vulgare* that was called *H. distichum* by Linnaeus. It is the variety commonly cultivated in Europe.

4755. The same, threshed and cleaned.

4756. The fruiting heads of six-rowed, red, Scotch, or square barley, on the stalk.—*H. vulgare* L., var. *pallidum*, which was called *H. hexastichum* by Linnaeus and is largely grown in Scotland.

4757. The same threshed and cleaned. Grown in California. Presented by Ernest Kreusch, of New York City.

4758. Another sample, presented by the United States Department of Agriculture.

Numbers 4759–4765 were presented by Ernest Kreusch, of New York City.

4759. No. 1 brewers' barley, as classified by the New York Produce Exchange. Grown in California.

4760. Choice No. 1 brewers' barley.

4761. Extra fancy No. 1 brewers' barley.

4762. Chevalier No. 1 barley.

4763. No. 1 dark feeding barley.

4764. No. 3 western barley.

4765. Extra No. 3 western barley.

4766. Pearl barley. Hulled barley.—The grain of barley with the shell ground off, having only the kernel. Used in soups and broths.

Buckwheat

Buckwheat is the grain of several species of *Fagopyrum* (*Polygonaceae*—Knotweed Family). As a food it is highly nutritious, but it is less digestible than other grains and, when eaten in excess, is liable to cause indigestion and skin eruptions.

Common buckwheat or Indian wheat on the stalk.—The fruiting stems of *Fagopyrum Fagopyrum* (L.) Karst. Native of eastern Europe and western Asia and cultivated in many countries having temperate climates.

4767. Japanese buckwheat in flower.

4768. The same in fruit.

4769. Japanese buckwheat. The cleaned grain.

4770. The same, with the hulls removed.

4771. Buckwheat flour.—The finely ground grain of buckwheat, with the shells sifted out.

4772. Grapenuts.—An artificial cereal breakfast food. Presented by F. H. Leggett & Company, of New York City.

Drugs

Vegetable drugs are plants or parts of plants from which medicines are made. A drug, if used in the natural state as medicine, is both a drug and a medicine, but usually the medicine is prepared from the drug in such a way as to destroy the original character of the latter. This may be done by extracting from it in a pure state the proximate principle that possesses the medicinal activity, as quinine from cinchona bark or morphine from opium; or a tincture, solid or fluid extract, syrup, or other galenical preparation may be made from it.

Some drugs are better adapted for the manufacture of one of these preparations and some for another, so that much study of drugs is required before the best methods of their employment can be determined. There is more or less conformity between botanical relationship and similar medicinal properties, although there are striking exceptions to the rule. Related plants, even when they do agree in medicinal properties, may differ very widely in the strength of such properties. Almost equally great differences in strength may exist between different lots of the same drug. Thus, one lot of opium may contain but three or four per cent. of morphine, while another may have fifteen or twenty per cent. These differences may be due to the region of growth, to the climate or the character of the season, to the stage of the plant's development when collected, to the method of curing, the care in packing and transporting, or to the length of time that has elapsed since collecting. It is therefore clear that medicines made from such drugs by a fixed process may exhibit equal differences in activity, and such differences have been of grave importance in medical practice.

The art of making medicinal preparations from drugs pertains to Pharmacy, which is thus one of the most im-

portant of the arts. That part of pharmacy that relates to the identification, estimation, and selection of drugs is Pharmacognosy. Many methods have been resorted to in the history of medicine to secure or insure uniformity in the strength of medicinal preparations. For the state of perfection to which this art has now been brought, the world is chiefly indebted to the house of Parke, Davis & Company, of Detroit, and to George S. Davis, its manager, and Albert B. Lyons, its distinguished chemist. These pioneers, in the face of great opposition, devised a class of fluid extracts known as "Normal Liquids," in which the amount and character of the drug used was so regulated that the preparation would always contain the same percentage of active constituent, that is, always have the same medicinal strength. This method of manufacture has since been developed and perfected until it is now the basis of modern methods in medicine manufacture. It is unfortunate that there are some drugs of which the medicinal constituent cannot be determined. In such cases, this method is not applicable, and in some of them the method of physiological standardization is now resorted to. By this method, the medicine is tested by administering it to a standard animal and noting the degree of the effect produced. The method is by no means so definite and positive as that for chemical standardization above described, but it has sufficed to vastly improve the quality of some medicines of that class.

The drugs in this Museum are classified primarily as to the part of the plant represented: (1) roots, rhizomes, bulbs, tubers, and other underground parts, (2) barks and woods, (3) leaves, (4) herbs and other plant-bodies, (5) flowers, (6) fruits, (7) seeds, (8) miscellaneous plant products, such as exudations, juices, and trichomes. Each of these groups has a subordinate botanical sequence.

Underground Portions

4773. Polypody root.—The rootstock of a species of *Polypodium* (*Polypodiaceae*—Fern Family). Used for its taste, of sugary sweetness. Presented by Peek & Velsor, of New York City.

4774. Crude male fern, or Aspidium (See No. 1729). Presented by Parke, Davis & Co., of Detroit, Michigan.

4775. Peeled male fern, or Aspidium.—The preceding, deprived of its stipe-bases and waste matter, and peeled. Same donor.

4776. Another sample of the same.

4777. Pure powdered male fern.—The preceding in the powdered state. Presented by H. H. Rusby.

4778. Another sample of the same, but heavily adulterated with chaff, bark, and other refuse matter. Same donor.

4779. Triticum. Dog-grass. Couch-grass.—The rootstock and roots of *Agropyrum repens* (L.) Beauv. (*Gramineae*—Grass Family). Native of Europe and Asia and naturalized in North America. Presented by Parke, Davis & Co., of Detroit, Michigan.

4780. Refuse dog-grass.—The roots and other refuse material removed from dog-grass and worthless for medicinal purposes. Offered as dog-grass in the New York market. Presented by H. H. Rusby.

4781. Crude spurious dog-grass. Bermuda grass.—The rootstocks and roots of *Capriola Dactylon* (L.) Kuntze. (Same family.) Native of tropical America. Offered in the New York drug market as dog-grass. Presented by H. H. Rusby.

4782. Cut spurious dog-grass.—The preceding in the cut state. Same donor.

4783. Another sample of the same. From the New York drug market. Same donor.

4784. Bamboo root.—The rootstock and roots of an undetermined species of bamboo. (Same family.) Native of the East Indies. From the New York drug market. Presented by H. H. Rusby.

4785. Vetivert. Vetiver. Kus-kus (See No. 1770). From Paraguay, through the Field Museum of Natural History, of Chicago.

4786. Capii Cati Guazu.—The rootstock and roots of *Kyllingia triceps* Rottb. (*Cyperaceae*—Sedge Family). Native of South America. From Paraguay, through the Field Museum of Natural History, of Chicago.

4787. Carnahuba salsonifera.—The roots of an undetermined plant, probably *Copernicia cerifera* (Ar.) Mart. (*Palmae*—Palm Family). Native of tropical America. From the New York drug market. Presented by H. H. Rusby.

4788. Tonga root.—The stems of *Epipremnum pinnatum* (L.) Eng. Native of the Fiji Islands. Presented by Parke, Davis & Company.

4789. Calamus. Sweet flag.—The rootstock of *Acorus Calamus* L. (See No. 1777). Collected in Bronx Park by W. N. Clute, June 20, 1899.

4790. Peeled or "bleached" Calamus.—The preceding, with its outer bark removed. Presented by Parke, Davis & Company, of Detroit, Michigan.

4791. Pinellia root.—The ground root of *Pinellia tuberifera* Tenore. (Same family.) Native of Japan. From the New York drug market. Presented by H. H. Rusby.

4792. Dracontium. Skunk cabbage.—The rootstock and roots of *Spathyema foetida* (L.) Raf. (Same family.) Native of northeastern North America. Collected in the New York Botanical Garden.

4793. American Arum. Wild turnip. Indian turnip. Jack-in-the-pulpit.—The corm of *Arisaema triphyllum* (L.) Torr. (Same family.) Native of northeastern North America.

4794. European Arum.—The corm of *Arum maculatum* L. (Same family.) Native of Europe. From the New York drug market. Presented by H. H. Rusby.

THE BUNCH-FLOWER FAMILY (*Melanthaceae*)

4795. American green hellebore. (See No. 2466.) Presented by Lehn & Fink, of New York City.

4796. White, or European, hellebore.—The rootstock and roots of *Veratrum album* L. Native of Europe and Asia. Properties same as of preceding. From the New York drug market. Same donor.

4797. False unicorn root. Blazing star. Star-grass.—The rootstock and roots of *Chamaelirium luteum* (L.) A. Gray. Used as a substitute for the genuine article (No. 4802). Native of eastern and central North America. Presented by Peek & Velsor, of New York City.

4798. Asphodel root.—The rootstock and roots of *Asphodelus ramosus* L. Native of the Mediterranean region. From the New York College of Pharmacy.

THE LILY FAMILY (*Liliaceae*)

4798.1. Madonna lily bulb.—The bulb of *Lilium candidum* L. Native of southern Europe and Asia and cultivated for ornament. Grown by H. H. Rusby at Newark, New Jersey.

4799. Colchicum root (See No. 2456). Presented by Parke, Davis & Co., of Detroit, Michigan.

4800. Another sample of the same. Same donor.

4801. Pure powdered Colchicum root.—The preceding in the powdered state. Presented by H. H. Rusby.

4802. Unicorn root. Star-grass.—The rootstock and roots of *Aletris farinosa* L. Native of eastern North America. Presented by Peek & Velsor, of New York City.

4803. The same, collected by Percy Wilson at Hempstead, Long Island, July, 1899.

4804. Squill bulbs.—The bulbs of *Urginea maritima* (L.) Baker. (See No. 2451.) Presented by H. H. Rusby.

4805. The commercial sliced form of the same. Same donor.

4806. Another sample, presented by Parke, Davis & Company.

4807. Beth-root or birth-root. Trillium. Wake-robin.—The rootstock of *Trillium erectum* L. and of closely allied species. Native of eastern and central North America. The commercial drug, presented by Parke, Davis & Company, of Detroit, Michigan.

THE LILY-OF-THE-VALLEY FAMILY (*Convallariaceae*)

4808. Solomon's seal.—The rootstock of a species of *Polygonatum*. Native of Europe. From the New York drug market. Presented by H. H. Rusby.

4809. Smooth Solomon's seal.—The rootstock of *P. commutatum* (R. & S.) Dietr. Native of eastern North America. Collected by H. H. Rusby at Newark, New Jersey, August, 1905.

4810. Hairy Solomon's seal.—The rootstock of *P. biflorum* (Walt.) Ell. Same region. Collected by A. A. Tyler, at Easton, Pennsylvania, 1898.

4811. False Solomon's seal.—The rootstock of *Vagnera racemosa* (L.) Morong. Native of eastern North America. Collected in Bedford Park, New York, by Percy Wilson, June 23, 1899.

4812. Another sample of the same.—Collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

4813. Lily-of-the-Valley. Convallaria. (See No. 1779.) Presented by Parke, Davis & Company, of Detroit, Michigan.

4814. Adulterated lily-of-the-valley.—Convallaria roots adulterated with the leaves of the same plant. Presented by H. H. Rusby.

4815. Asparagus root.—The roots of *Asparagus officinalis* L. (See No. 2448.) Presented by H. H. Rusby.

THE SARSAPARILLA FAMILY (*Smilaceae*)

4816. Bamboo briar root.—The rootstock of *Smilax Pseudo-China* L. Native of the southern United States. From the New York drug market. Presented by H. H. Rusby.

4817. Carrion flower root.—The rootstock of *S. herbacea* L. Native of North America. Collected by A. A. Tyler at Easton, Pennsylvania, 1898.

4818. Honduras sarsaparilla.—The roots of *S. officinalis* Kunth. Native of Central America and northern South America. An original bundle from Honduras, presented by Lehn & Fink, of New York City.

4819. Commercial Honduras sarsaparilla.—The root of a species of *Smilax*, apparently unnamed. Collected by Percy Wilson, in Honduras, February, 1902.

4820. Mexican sarsaparilla.—The roots of *S. medica* Sch. & Cham. Native of Mexico. Commercial sample that has been bundled in imitation of Honduras sarsaparilla, for fraudulent purposes. Presented by Parke, Davis, and Company, of New York City.

4821. The same; an original bundle from Mexico. Presented by Lehn & Fink, of New York City. The short pieces of rootstock are to be rejected when used for medicine.

4822. Pure powdered sarsaparilla.

4823. Sarsaparilla rhizomes.—The rootstocks of the preceding, to be removed before using. Presented by H. H. Rusby.

4824. Oaxaca sarsaparilla.—The root of an undertermined species of *Smilax* from southwestern Mexico. Acquired by H. H. Rusby in the market of Oaxaca, Mexico, March, 1910.

4825. Spurious Mexican sarsaparilla.—The root of an undertermined species of *Smilax* from Vera Cruz, Mexico, imported into the New York market as genuine Mexican sarsaparilla. Presented by H. H. Rusby.

4826. Spurious sarsaparilla.—Probably the roots of a species of *Smilax*, native of southwestern Mexico, and imported into the New York market as sarsaparilla. Presented by H. H. Rusby.

4827. Guatemala sarsaparilla.—The root of a species of *Smilax*, probably *S. ornata* Hook. f. Native of Central America. From the Guatemala exhibit at the Pan-American Exposition, Buffalo, New York, November, 1900.

4828. Native Jamaica sarsaparilla.—The root of *S. utilis* Hemsley. Native of Jamaica. Grown in the Castleton Botanic Garden. Collected by D. T. MacDougal, July, 1903.

4829–4830. No. 1 and No. 2 red Jamaica sarsaparilla. Commercial grades of the preceding. Acquired in a Jamaica market by the same donor.

4831. Santo Domingo sarsaparilla.—Probably the root of a species of *Smilax*, from Santo Domingo. Presented by H. H. Rusby.

4832. Porto Rico sarsaparilla.—Probably the root of the century plant, or maguey, *Agave americana* L. (*Amaryllidaceae*—Amaryllis Family), offered in the New York market as a fraudulent substitute for sarsaparilla. Presented by H. H. Rusby.

4833. Central America, Costa Rica, Lima, or "Jamaica," sarsaparilla.—The root of *Smilax ornata* Hook. f. Native of Central America and formerly exported *via* Lima, Peru, and Jamaica, whence the names. Presented by H. H. Rusby.

4834. Rio Janeiro Brazilian sarsaparilla.—The roots of *S. brasiliensis* Spreng. Native of southern Brazil. Presented by the New York College of Pharmacy.

4735. Ecuador sarsaparilla.—The root of a species of *Smilax* from Ecuador, perhaps *S. ornata*. From the New York drug market. Presented by H. H. Rusby.

4836. Daffodil root.—The dried bulbs of *Narcissus Pseudo-Narcissus* L. (*Amaryllidaceae*—Amaryllis Family). Native of Europe and largely cultivated for ornament. Grown by H. H. Rusby at Newark, New Jersey, April, 1919.

4837. The same, in the fresh condition, attached to the foliage. Same donor.

4838. Wild yam root. Colic root.—The rootstock of *Dioscorea villosa* L. (*Dioscoreaceae*—Yam Family). Native of eastern North America. Collected in Bedford Park, New York, by Percy Wilson, June, 1899.

4839. Southern wild yam root.—The rootstock of *D. hirticaulis* Bartlett. Native of and collected in MacDuffie County, Georgia, by H. H. Bartlett.

4840. Glaucous wild yam root.—The rootstock of the mountain form of *D. glauca* Muhl. From the summit of House and Barn Mountain, Virginia. Collected by C. S. N. Alsberg.

4841. The valley form of the preceding. Collected in Russell County, Virginia, by C. S. N. Alsberg.

4842. Wild yam root from an undetermined species of *Dioscorea*. Collected by J. A. Shafer at Carnot, Pennsylvania, March 25, 1904.

4843. Spurious wild yam root.—The rootstock of *D. paniculata glabrifolia*. Native of the eastern United States. Presented by H. H. Bartlett.

4844. The rootstock of an undetermined species of *Dioscorea*. Native of the southeastern United States. Presented by H. H. Rusby.

4845. Iris versicolor. Blue flag.—The rootstock of *Iris versicolor* L. (*Iridaceae*—Iris Family). Native of North America. Collected by W. N. Clute in Bedford Park, New York, June, 24 1899.

4846. Florentine orris root (See No. 1785).—A commercial sample presented by Parke, Davis, and Company, of New York City.
4847. Veronese orris root.—The rootstock of a species if *Iris*, probably *I. pallida* Lam., prepared like the preceding. Native of the same region and similarly cultivated. Same donor.

THE GINGER FAMILY (*Zingiberaceae*)

4848. Ginger. (See No. 1396.)
4849. Unbleached Jamaica ginger.—A peeled, scraped, and carefully prepared variety of the preceding. Grown and prepared in Jamaica, West Indies. Presented by Lehn & Fink, of New York City.
4850. Bleached Jamaica ginger.—The preceding, dipped in milk of lime. Same donor.
4851. African ginger.—The same, partially peeled and treated with boiling water before drying. Produced in Africa. Same donor.
4852. Race ginger.—The same similarly treated with boiling water in the East Indies. Same donor.
4853. Cochin ginger.—The same, having only the outer bark removed, and dried without treatment with boiling water. Prepared in Cochin-China. Presented by the New York College of Pharmacy.
4854. Japanese ginger.—Ginger grown in Japan. Presented by E. R. Durkee & Company.
4855. Chinese ginger.—The same, produced in China. Presented by Parke, Davis & Company.
4856. Paraguay ginger.—Ginger produced in Paraguay. Presented by the Field Museum of Natural History, of Chicago.
4857. Galangal.—The rootstock of *Alpinia officinarum* Hance. Native of China and cultivated like ginger. Presented by Parke, Davis & Company, of New York.
4858. Kaempferia root. Sherungula.—The rootstock of a species of *Kaempferia*. Native of South Africa and cultivated. Grown in Witwatersrand, South Africa.

4859. Siamese turmeric, or Curcuma.—The rootstock of a cultivated variety of a species of *Curcuma*, probably *C. longa* L. (*Zingiberaceae*—Ginger Family). Native of southern Asia. Produced in Siam. From the Field Museum of Natural History, Chicago.
4860. Madras turmeric, or Curcuma.—The same, grown in Madras, India. Presented by Parke, Davis & Company, of Detroit, Michigan.
4861. Ceylon turmeric, or Curcuma.—Another sample of the same, grown in Ceylon.
4862. Pure powdered Curcuma, or turmeric.—The preceding, in the powdered state. Presented by H. H. Rusby.
4863. The preceding, heavily adulterated with damaged wheat flour. Same donor.
4864. Zedoaria. Zedoary. Presented by Parke, Davis & Company, of New York City.

4865. Cypripedium. Lady's slipper. American valerian.—The rootstock and roots of *Cypripedium hirsutum* Mill. (*Orchidaceae*—Orchid Family). Native of eastern North America. A commercial sample, presented by Peek and Velsor, of New York.

4866. False lady's slipper.—The rootstock and roots of *Fissipes acaulis* Ait. Native of northeastern North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 20, 1919.

4867. Salep. Adam and Eve. Orchis.—The tubers of *Orchis mascula* L. (*Orchidaceae*—Orchid Family). Native of Europe. Presented by Merck & Company, of New York.

4868. Kava. Ava. Methysticum. (See No. 2393.) Native of the South Sea Islands and cultivated as the source of an intoxicating beverage. Presented by Parke, Davis & Company.

4869. Another sample of the same, comprising both rootstock and roots. Same donor.

4870. Muira-Puama.—The roots of *Dulacia ovata* (Miers) Lyons (*Olacaceae*—Olax Family). Native of tropical America. From the New York drug market. Presented by H. H. Rusby.

4871. The stems of the preceding species. Presented by Merck & Company.

4872. Canada snakeroot. Wild ginger.—The rootstock and roots of *Asarum canadense* L. (*Aristolochiaceae*—Snakeroot Family). Native of eastern North America. Collected by A. A. Tyler at Easton, Pennsylvania, 1898.

4873. Another sample of the same, being the rootstock and roots of *A. reflexum* Bicknell. Collected by Percy Wilson in Bedford Park, New York, June, 1899.

4874. Heart-leaved snakeroot.—The rootstock and roots of *Hexastylus arifolia* (Michx.) Small. (Same family.) Native of the southeastern United States. Collected by H. H. Rusby at Somerville, South Carolina, March 22, 1909.

4875. Serpentaria. Snakeroot. Virginia snakeroot.—The rootstock and roots of *Aristolochia Serpentaria* L. (Same family). Native of the eastern United States. Presented by Parke, Davis & Company, of New York.

4876. Pure powdered Virginia snakeroot, or Serpentaria.—The preceding, in the powdered state. Presented by H. H. Rusby.

4877. The same, containing much sand and earthy matter. Same donor.

4878. Red river, or Texas, snakeroot.—The rootstock and roots of *A. reticulata* Nutt. Native of Texas and the adjacent region. Same donor.

4879. Colombian snakeroot.—The root of a species of *Aristolochia*. Native of the Republic of Colombia. Presented by H. H. Rusby.

THE KNOTWEED FAMILY (*Polygonaceae*)

4880. Bistort. Bistorta.—The rootstock of *Polygonum Bistorta* L. Native of Europe and western Asia. Presented by Peek and Velsor, of New York.

4881. Rheum. Rhubarb.—The rootstock and larger roots of *Rheum officinale* Baill. Deprived of its outer bark and carefully dried in the sunshine. Native of China and cultivated. Presented by the New York College of Pharmacy.

4882. Another sample of the same. Presented by Merck & Company.

4883. Pure powdered rhubarb.—The preceding, in the powdered state. Presented by H. H. Rusby.

4884. The same, adulterated with starch. Same donor.

4885. A sample of rhubarb that was not peeled and that was spoiled by excessive heat in drying. Presented by H. H. Rusby.

4886. The small roots and waste pieces removed in preparing the two preceding for market. Presented by H. H. Rusby.

4887. English rhubarb.—Chinese rhubarb grown in England. Presented by Merck & Company.

4888. Rhaponticum. European rhubarb.—The unpeeled rootstock and larger roots of *Rheum rhaponticum* L. Native of Europe and cultivated as "pie-plant." A poor substitute for rhubarb. From the New York market. Presented by H. H. Rusby.

4889. The same. Presented by Merck & Company.

4890. Dock. Curly dock. Rumex.—The root of *Rumex crispus* L. (See No. 3338.) Collected by R. S. Williams in the New York Botanical Garden, July, 1919.

4891. Yellow dock. Broad-leaved Dock. False curly dock.—The roots of *Rumex obtusifolius* L. Same home as preceding. Collected by Percy Wilson in Bedford Park, New York, July, 1899.

4892. Red dock. Bloody dock. Blood-wort.—The root of *R. sanguineus* L. Same home as preceding. From the New York drug market. Presented by H. H. Rusby.

4893. Canaigre. Wild pie-plant.—The roots of *Rumex hymenosepalus* Torr., one year old. (See No. 1353.)

4894. Achyranthes root.—The powdered root of *Achyranthes bidentata* Blume (*Amaranthaceae*—Amaranthus Family). Native of eastern Asia. A commercial sample, presented by H. H. Rusby.

4895. Poke-root. Phytolacca. Red-ink berry. Pigeon-berry (See No. 1727).—Collected by P. Wilson, Bedford Park, New York, June 29, 1899.

4896. A dried sample of the same. Collected by H. H. Rusby at Newark, New Jersey.

4897. The preceding, cut for use as a drug. A commercial sample.

4898. Pure powdered Phytolacca, or poke-root. The preceding in the powdered state. Presented by H. H. Rusby.

4899. Petiveria root.—The dried root of *Petiveria pentandra* Gomez. (Same family.) Native of tropical America. From Paraguay, through the Field Museum of Natural History.

4900.

4901. A commercial sample of the same from the New York drug market. Presented by Parke, Davis & Company.

4902. Levant soaproot.—The root of *Gypsophila Struthium* L. (Same family.) Native of the Mediterranean region. From the New York drug market. Presented by H. H. Rusby.

4903. White pond-lily. Water-lily.—The rootstock of *Castalia odorata* (Dryander) Woodv. & Wood (*Nympheaceae*—Water-lily Family). Native of eastern

North America. A commercial sample, presented by Parke, Davis & Company, of New York.

4904. Yellow pond-lily. Spatter-dock. Yellow water-lily.—The rootstock of *Nymphaea advena* Soland. (Same family.) Native of eastern and central North America. A commercial sample, presented by Parke, Davis & Company, of New York.

THE BUTTERCUP FAMILY (*Ranunculaceae*)

4905. Aconitum. Aconite. Monk's-hood. (See No. 2532.) A commercial sample, presented by Merck & Company, of New York.

4906. German aconite.—The preceding, grown in Germany. Presented by Parke, Davis & Company, of New York.

4907. Pure powdered aconite root.—The preceding in the powdered state. Presented by H. H. Rusby.

4908. Spanish aconite.—A species of aconite native in Spain. Presented by H. H. Rusby.

4909. Spurious aconite.—The tuberous root of *Aconitum hians* Hooker (?). Native of northern Europe and Asia. From Punjab, India. Presented by the Reporter on Economic Products for British India.

4910. Spurious aconite.—The tuberous root of *A. palmatum* D. Don. Native of India. From Darjeeling, India. Same donor.

4911. Spurious aconite.—The tuberous root of *A. heterophyllum* Wall. Native of India. From the northwestern provinces of India. Same donor.

4912. Spurious aconite.—The tuberous root of a species of *Aconitum*. Native of of Europe. From the New York drug market. Presented by H. H. Rusby.

4913. Japanese aconite.—The tuberous root of *A. Fischeri* Reich. Native of Japan. Presented by Parke, Davis & Co., of New York.

4914. Indian aconite.—The tuberous root of *A. ferox* Wall. Native of the Himalaya Mts. From Punjab, India. Presented by the Reporter on Economic Products for British India.

4915. Peony root.—The root of *Paeonia officinalis* L. Native of southern Europe and cultivated for ornament. Grown by H. H. Rusby at Newark, New Jersey. Collected August 10, 1919.

4916. Ground white peony root.—The ground dried root of *P. albiflora* Pall. Native of Siberia and cultivated. From the New York drug market. Presented by H. H. Rusby.

4917. Black hellebore. (See No. 2522.) A commercial sample presented by Lehn & Fink, of New York.

4918. Another sample, presented by Merck & Company, of New York.

4919. Adulterated black hellebore.—A sample of the same, adulterated with some other root. Presented by the New York College of Pharmacy.

4920. Cimicifuga. Black cohosh.—The rootstock and roots of *Cimicifuga racemosa* (L.) Nutt. Native of northeastern North America. A commercial sample presented by Parke, Davis & Company, of New York.

4921. Another sample of the same, collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

4922. Pure powdered Cimicifuga, or black cohosh.—The preceding in the powdered state. Presented by H. H. Rusby.

4923. White baneberry.—The rootstock and roots of *Actaea alba* (L.) Mill. Native of eastern North America. Collected by P. Wilson in Bedford Park, New York, July, 1899.

4924. Red baneberry.—The rootstock and roots of *Actaea rubra* (L.) Willd. Native of North America.

4925. Shrubby yellow root. Yellow wood. Xanthorrhiza.—The rootstock and root of *Xanthorrhiza apiifolia* L'Hér. Native of the southeastern United States. A commercial sample, presented by Parke, Davis & Company, of New York.

4926. Another sample of the same, collected by H. H. Rusby at Mount Airy, North Carolina, June 21, 1909.

4927. Golden seal. Yellow puccoon. Hydrastis. (See No. 2527.) A commercial sample, presented by Parke, Davis & Company, of New York.

4928. Pure powdered hydrastis or golden seal.—The preceding in the powdered state. Presented by H. H. Rusby.

4929. The same, but containing dirt and stems. Same donor.

4930. The same, adulterated with about 10% of *Xanthorrhiza*. Same donor.

4931. Gold-thread. Coptis.—The rootstock of *Coptis trifolia* (L.) Salisb. Native of northeastern North America. A commercial sample, presented by Parke, Davis & Company, of New York.

THE BARBERRY FAMILY (*Berberidaceae*)

4932. Berberis. Barberry root. (See No. 2541).—A commercial sample, presented by Parke, Davis & Company.

4933. Another sample of the same or a related species. Presented by H. H. Rusby.

4934. Oregon grape root.—The root of *Berberis aquifolium* Pursh. Native of northwestern North America. A commercial sample, presented by Parke, Davis and Company, of New York.

4935. Berberine sulphate. The sulphate of an alkaloid which is the principal active constitutent of Berberis, and which also occurs in other plants.

4936. Blue cohosh. Blueberry root. Papoose root.—The rootstock and roots of *Caulophyllum thalictroides* (L.) Michx. Native of eastern North America. A commercial sample presented by Parke, Davis & Company, of New York.

4937. Podophyllum. Mandrake. May-apple. Umbrella-leaf. (See No. 2538.) Collected by P. Wilson, at West Orange, New Jersey, July 4, 1899.

4938. Indian Podophyllum. Emodi root.—The rootstock of *P. Emodi* Wall. Native of British India. Presented by Merck & Company.

THE MOONSEED FAMILY (*Menispermaceae*)

4939. Menispermum. Moonseed. Yellow parilla. Texas sarsaparilla.—The rootstock of *Menispermum canadense* L. Native of eastern and central North America. Collected by R. Ringe in Bedford Park, New York, June 20, 1898.

4940. Pareira brava.—The root of *Chondrodendron tomentosum* R. & P. Native of tropical South America. A commercial sample, presented by Parke, Davis & Company, of New York.

4941. Another sample of the same. Same donor.

4942. Yellow or spurious pareira brava. Raiz abuta.—The stem and root of a species of *Abuta* of tropical South America. Presented by Lanman & Kemp, of New York.

4943. Spurious pareira brava. Identity unknown. Presented by H. H. Rusby.

4944. Calumba. Columbo.—The root of *Jateorrhiza Columba* (Roxb.) Miers. Native of eastern Africa. A commercial sample, presented by Parke, Davis & Company, of New York.

4945. Pure powdered calumba.—The preceding in the powdered state. Presented by H. H. Rusby.

4946. Cissampelos. False pareira.—The root of *Cissampelos Pareira* L. Native of tropical regions. Presented by The New York College of Pharmacy.

4947. Tinospora. Galuncha.—The root of *Tinospora cordifolia* Miers. Native of India. A commercial sample, presented by Lehn & Fink, of New York.

THE POPPY FAMILY (*Papaveraceae*)

4948. Corydalis. Turkey-corn or squirrel-corn.—The tubers of *Bicuculla canadensis* (Goldie) Millsp. Native of northeastern North America. A commercial sample presented by Parke, Davis & Company, of New York.

4949. Bloodroot. Sanguinaria. Red puccoon. (See No. 2583).—A commercial sample, presented by Parke, Davis & Company, of New York.

4950. The same collected by P. Wilson in Bedford Park, New York, June 30, 1898.

4951. Pure powdered Sanguinaria, or bloodroot.—The preceding in the powdered state. Presented by H. H. Rusby.

4952. Southern bloodroot.—The rootstock of *Sanguinaria australis* Greene. Native of the southeastern United States. Collected by H. H. Rusby at Mount Airy, North Carolina, June 20, 1909. (See Herbarium.)

4953. Chelidonium. Garden celandine root.—The roots of *Chelidonium majus* L. Native of Europe and naturalized in the United States. Collected by P. Wilson in Bedford Park, New York, July 5, 1899.

4954. Horseradish. Armoracia. (See No. 1526).—A commercial sample, presented by Parke, Davis & Company, of New York.

4955. Pitcher plant. Side-saddle-flower root.—The rootstock and roots of *Sarracenia purpurea* L. (*Sarraceniaceae*—Pitcher-plant Family). Native of eastern North America. Collected by H. H. Rusby at Lake Minagami, near Glenada, Quebec, September, 1920.

4956. Yellow pitcher plant.—The root of *S. flava* L. Native of the southeastern United States. Collected by H. H. Rusby at Sommerville, South Carolina, March 19, 1909.

4957. Alum root. Heuchera.—The root of *Heuchera americana* L. (*Saxifragaceae*—Saxifrage Family). Native of eastern North America. Collected by W. N. Clute in Bedford Park, New York, June 24, 1899.

4958. Hydrangea. Seven barks.—The root of *Hydrangea arborescens* L. (Same family). Native of the eastern United States. Collected by A. Ruth, at Knoxville, Tennessee.

4959. A commercial sample of the same, presented by Peek & Velsor, of New York.

4960. Another sample of the same, collected by H. H. Rusby at Mount Airy, North Carolina, June 20, 1909.

THE ROSE FAMILY (*Rosaceae*)

4961. Gillenia. North American ipecac. Indian physic. Bowman's root.—The root of *Porteranthus trifoliatus* (L.) Britton. Native of eastern North America. A commercial sample, presented by Peek & Velsor, of New York.

4962. Another sample of the same, collected by H. H. Rusby at Mount Airy, North Carolina, June 20, 1909.

4963. Tormentilla.—The rootstock of *Potentilla Tormentilla* Neck. Native of Europe and northern Asia. A commercial sample, presented by Parke, Davis & Company, of New York.

4964. A sample of very large rootstocks of the same. From the New York drug market. Presented by H. H. Rusby.

4965. European avens root.—The rootstock and roots of *Geum urbanum* L. Native of Europe. Presented by Lehn & Fink.

4966. Purple, or water, avens.—The rootstock and roots of *Geum rivale* L. Native of the north temperate zone. Presented by Parke, Davis & Company, of New York.

THE MIMOSA FAMILY (*Mimosaceae*)

4967. Gogo root.—The root of *Entada scandens* (L.) Benth. Native of tropical regions. Presented by the New York College of Pharmacy.

THE PEA FAMILY (*Fabaceae*)

4968. Italian, Spanish, or French licorice root.—The rootstock and roots of *Glycyrrhiza glabra* L. (See No. 1533.) Presented by Parke, Davis & Company, of New York.

4969. Another sample of the same. Same donor.

4970. Cut licorice root.—An inferior grade of licorice root, cut into short pieces. Presented by H. H. Rusby.

4971. Russian licorice root.—The root of *G. glandulifera* Waldst. & Kitt. (See No. 1536.) Same donor.

4972. Persian licorice root.—The rootstock of *G. uralensis* Fisch. Native of western Asia. From the New York drug market. Presented by H. H. Rusby.

4973. Ononis root. Root-harrow root. (See No. 2669.)

4974. Wild Indigo root. Dyer's greenweed. (See No. 1297.) Collected by A. A. Tyler at Easton, Pennsylvania, August 16, 1898.

4975. Japanese wistaria root.—The root of *Kraunhia japonica* (Sieb. & Zucc.) Taub. Native of Japan and cultivated for ornament. Grown by H. H. Rusby at Newark, New Jersey, July 3, 1919.

4976. Peruvian Krameria. Rhatany or Rhatania.—The root of *Krameria triandra* R. & P. (*Krameriaceae*—Krameria Family). Native of the central Andes of South America. Presented by Parke, Davis & Company, of New York.

4977. Texas Krameria.—The root of *K. lanceolata* Torr. Native of the southwestern United States. Collected by A. A. Heller in New Mexico.

4978. Wild Geranium. Cranesbill.—The rootstock of *Geranium maculatum* L. (*Geraniaceae*—Geranium Family). Native of eastern and central North America. Collected by R. Ringe in Bedford Park, New York, June 24, 1899.

4979. Dictamnus root. Garden ginger. European dittany. White Fraxinella. The root of *Dictamnus albus* L. (*Rutaceae*—Rue Family). Native of Europe and cultivated for ornament. From the New York drug market, presented by H. H. Rusby.

4980. Goanese ipecac. Naregamia.—The root of *Naregamia alata* W. & A. (*Meliaceae*—Mahogany Family). Native of the East Indies. A commercial sample, presented by Merck & Company, of New York.

4981. Manitoba Senega root.—The root of *Polygala Senega* L. (*Polygalaceae*—Milkwort Family). Grown in western Manitoba. Native of eastern and central North America. Collected by A. W. Burman, June, 1900.

4982. Commercial Senega.—A commercial sample of the same, presented by Parke, Davis & Company, of New York.

4983. Pure powdered Senega.—The preceding in the powdered state. Presented by H. H. Rusby.

4984. The same, adulterated with about 5 % of starch. Same donor.

4985. The same, with about 50% of adulterant. Same donor.

4986. Stillingia. Queen-of-the-meadow. Queen's-root.—The root of *Stillingia sylvatica* L. (*Euphorbiaceae*—Spurge Family). Native of the southeastern United States. A commercial sample presented by Parke, Davis & Company, of New York.

4987. Velamo del campo.—The root of *Croton antisyphiliticus* Mart. (Same family). Native of Brazil and Paraguay. Presented by the New York College of Pharmacy.

4988. Agua ri bay mi—The root of *Schinus* sp. (*Anacardiaceae*—Sumac Family). Native of tropical America. From Paraguay, through the Field Museum of Natural History.

4989. New Jersey, or Walpole, tea. Red-root.—Native of the eastern United States. (See No. 2211.) Collected by A. A. Tyler at Easton, Pennsylvania, August 8, 1898.

4990. Marshmallow root. Althea.—The root of *Althaea officinalis* L. (*Malvaceae*—Mallow Family). Deprived of its outer periderm. Native of Europe and Asia, and cultivated. Presented by Parke, Davis & Company, of New York.

4991. Another sample, presented by Merck & Company.

4992. Cut Althea.—Another sample of the same, cut into small pieces. Same donor.

4993. Passiflora. Passion-flower root. May-pops.—The root of *Passiflora incarnata* L. (*Passifloraceae*—Passion-flower Family). Native of the southeastern United States and cultivated for ornament. Presented by Peek & Velsor, of New York.

THE IVY FAMILY (*Araliaceae*)

4994. American spikenard.—The root of *Aralia racemosa* L. Native of the eastern United States. Collected by H. H. Rusby at Upper Montclair, New Jersey.

4995. Wild, or Virginia, sarsaparilla. Small spikenard.—The root of *Aralia nudicaulis* L. Native of eastern and central North America. Collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

4996. Dwarf elder root.—The root of *Aralia hispida* L. Native of eastern North America. From the New York drug market. Presented by H. H. Rusby.

4997. Powdered Chinese ginseng, or jinsheng.—The ground root of *Panax Ginseng* Nees. Native of eastern Asia and cultivated. From the New York drug market. Presented by H. H. Rusby.

4998. Exhausted Korean ginseng, or jinsheng.—The preceding, after the removal of its active constituent. Same source.

THE CARROT FAMILY (*Ammiaceae*)

4999. Brimstone, or sulphur, root. Hog-fennel.—The root of *Peucedanum officinale* L. Native of Europe. Presented by Merck & Company, of New York.

5000. Masterwort. Felonwort.—The root of *Imperatoria Ostruthium* L. Native of central and southern Europe. Presented by Parke, Davis & Company, of New York.

5001. Lovage. Levisticum. (See No. 1958.) Presented by Parke, Davis & Company, of New York.

5002. Spurious lovage.—The roots of an undetermined plant of the family *Ammiaceae*, collected near Asheville, North Carolina, and offered in the New York drug market as lovage. Presented by H. H. Rusby.

5003. Parsley root.—The root of *Apium Petroselinum* L. (See No. 1578.) Presented by Parke, Davis & Company, of New York.

5004. Sumbul root.—The root of *Ferula Sumbul* Hook. f. Native of central and northwestern Asia. Presented by Parke, Davis & Company, of New York.

5005. Eryngium root. Seminole black drink.—The root of *Eryngium synchaetum* (A. Gray) Coulter and Rose. Native of the southeastern United States. Collected by R. M. Harper in Sumpter County, Georgia, 1900.

5006. Another sample of the same. Collected by Perley Poore Sheehan in Florida, 1919.

5007. Black snake-root, or sanicle.—The root of *Sanicula marylandica* L. Native of the eastern United States. Collected by P. Wilson in Bedford Park, New York, July 21, 1899.

5008. Woolly sweet cicely, or sweet anise.—The root of *Washingtonia Claytoni* (Michx.) Britton. Native of eastern North America. Collected by P. Wilson in Bedford Park, New York, June 21, 1899.

5009. Anise root.—The root of *Pimpinella Anisum* L. (See No. 1573.) Presented by Parke, Davis & Company, of New York.

5010. Small pimpernel. Burnett saxifrage.—The root of *Pimpinella Saxifraga* L. Native of central and western Asia. Presented by Parke, Davis & Company, of New York.

5011. American Angelica.—The root of *Angelica atropurpurea* L. Native of the eastern United States. Presented by Parke, Davis & Company, of New York.

5012. American Angelica root.—Another sample of the same. Collected near Asheville, North Carolina, 1919. Presented by H. H. Rusby.

5013. European Angelica.—The root of *Angelica Archangelica* L. Native of Europe and northern Asia.

5014. Powdered hemlock. Parsley root. Seng-kin. Conioselinum root.—The root of *Selinum Benthamii* S. Watson, in the powdered state. Native of Japan. From the New York drug market. Presented by H. H. Rusby.

5015. Osha root. Colorado cough-root.—The root of *Ligusticum filicinum* S. Watson. Native of Colorado and the adjacent country. From the New York drug market. Presented by H. H. Rusby.

5016. Gelsemium. Yellow jessamine root.—The rootstock and root of *Gelsemium sempervirens* Ait. (See No. 2792.) Presented by Parke, Davis & Company, of New York.

5017. Spigelia. Pink-root. Worm-grass.—The rootstock and roots of *Spigelia marylandica* L. (Same family). Native of the eastern and central United States. Presented by Parke, Davis & Company, of New York.

5018. Pure powdered Spigelia, or pink-root.—The preceding in the powdered state. Presented by H. H. Rusby.

5019. The same, heavily adulterated with sand. Same donor.

5020. The same, adulterated with a little *Ruellia* root. Same donor.

5021. The same, mostly *Ruellia* root. Same donor.

5022. Powdered *Ruellia* root, sold as "Powdered Spigelia." Same donor.

5023. Adulterated Spigelia.—The preceding, adulterated with its stems and very dirty.

THE GENTIAN FAMILY (*Gentianaceae*)

5024. Gentian. Gentiana. Yellow gentian.—The rootstock and roots of *Gentiana lutea* L. Native of Europe. Presented by Parke, Davis & Company, of New York.

5025. Pure powdered gentian root.—The preceding in the powdered state. Presented by H. H. Rusby.

5026. The same, adulterated with about 5% of exhausted birch bark. Presented by H. H. Rusby.

5027. False gentian.—The root of *G. Kurroo* Royle. Native of southern Asia. Same donor.

5028. Frasera. American Columbo.—The root of *Frasera caroliniana* Walt. Native of the southeastern United States. Presented by Peek & Velsor, of New York.

5029. Another sample of the same. Presented by J. L. Hopkins & Company.

5030. Buck-bean. Bog-bean. Menyanthes.—The rootstock of *Menyanthes trifoliata* L. Native of the north temperate zone. Presented by Parke, Davis & Company, of New York.

5031. Canadian hemp. Apocynum.—The rootstock and root of *Apocynum cannabinum* L. (*Apocynaceae*—Dogbane Family). Native of North America. Collected by A. A. Tyler at Easton, Pennsylvania, 1898.

5032. Another sample of the same. Presented by H. H. Rusby.

5033. Another sample. Collected by R. Ringe in Bedford Park, New York, June 20, 1899.

5034. Apocynum medium.—The rootstock and roots of *A. medium* Greene. Native of eastern North America. Collected by H. H. Rusby at Newark, New Jersey, 1899.

5035. Dogbane.—The rootstock and root of *A. androsaemifolium* L. Native of North America. Collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

5036. Pleurisy root. Asclepias. Butterfly weed. Orange-flowered milkweed. The tuberous root of *Asclepias tuberosa* L. (See No. 3287.) Collected by W. N. Clute in Bedford Park, New York, July 10, 1899.

5037. False pleurisy root.—The tuberous root of *A. curassavica* L. Native of the southern United States and tropical America. Collected by H. H. Rusby in Maryland.

5038. False pleurisy root.—The root of *A. decumbens* L. Native of the eastern United States. Same collector.

5039. Common milkweed, or silkweed.—The root of *A. syriaca* L. Native of North America. Collected by A. A. Tyler, at Easton, Pennsylvania, August 12, 1899.

5040. Madar. Mudar.—The root of *Calotropis gigantea* (L.) Dryand. Native of southern Asia and introduced into tropical America. Presented by the New York College of Pharmacy.

THE MORNING-GLORY FAMILY (*Convolvulaceae*)

5041. Jalap. Jalapa.—The tuberous root of *Exogonium Purga* (Wend.) Lindl. (See No. 2839.) Presented by Parke, Davis & Company, of New York.

5042. Pure powdered jalap.—The preceding in the powdered state. Presented by H. H. Rusby.

5043. Brazilian jalap.—The tuberous root of *Piptostegia Pisonis* Mart. Native of Brazil. Specimen from the New York drug market. Presented by H. H. Rusby.

5044. Spurious jalap.—The tuberous root of a Mexican species of *Ipomoea*. Presented by H. H. Rusby.

5045. Scammony. Scammonium.—The root of *Convolvulus Scammonium* L. (See No. 2833.) From the New York drug market.

5046. Mexican scammony. Male jalap.—The tuber of *Ipomoea orizabensis* (Pel.) Ledeb. (See No. 2834.) From the New York drug market. Presented by H. H. Rusby.

5047. Another sample of the same, from the same source.

5048. Man-root. Man-in-the-ground.—The tuberous root of *Ipomoea pandurata* (L.) Meyer. Native of the eastern and central United States. Collected at Biltmore, North Carolina. Presented by George W. Vanderbilt.

5049. Cabeza de negro.—The tuberous root of a species of *Batatus*. Native of Brazil. From the Field Museum of Natural History.

5050. Turpeth root.—The root of *Operculina Turpethum* (L.) Peters. Native of the East Indies. From the New York drug market. Presented by H. H. Rusby.

5051. Another sample of the same. Same donor.

5052. Comfrey. Symphytum.—The root of *Symphytum officinale* L. (*Boraginaceae*—Borage Family). Native of Europe and cultivated. Naturalized in the United States. Presented by Parke, Davis & Company, of New York.

5053. Another sample of the same. Presented by J. L. Hopkins & Company.

5054. Alkanet. Alkanna. (See No. 1311.) Presented by Lehn & Fink, of New York.

5055. Another sample of the same. Presented by Merck & Company.

5056. Stone-root. Knot-root. Collinsonia.—The rootstock of *Collinsonia canadensis* L. (*Labiatae*—Mint family). Native of North America. Collected by P. Wilson in Bedford Park, June 21, 1900.

5057. Another sample of the same. Collected by H. H. Rusby at upper Montclair, New Jersey, July 3, 1919.

5058. Horse-nettle.—The root of *Solanum carolinense* L. Native of eastern North America. Presented by Parke, Davis & Company, of New York.

5059. Belladonna root. Deadly nightshade.—The root of *Atropa Belladonna* L. (See No. 2850.) Presented by Parke, Davis & Company, of New York.

5060. Pure powdered belladonna root.—The preceding in the powdered state. Presented by H. H. Rusby.

5061. A sample of the same containing considerable impurity of various kinds. Same donor.

5062. Worthless belladonna root.—The woody crowns of belladonna root, of little value for medicinal purposes. Presented by H. H. Rusby.

5063. Scopola. Scopolia. Japanese belladonna.—The rootstock of *Scopolia carniolica* Jacq. Native of southeastern Europe. From the New York College of Pharmacy.

5064. Japanese scopola.—The rootstock of *Scopolia japonica* Maxim. Native of Japan. Same donor.

5065. Another sample of the same. From the New York College of Pharmacy.

5066. Manaca.—The root of *Brunfelsia Hopeana* Benth. Native of Brazil. From the New York drug market. Presented by H. H. Rusby.

5067. Another sample of the same. Same donor.

5068. Red manaca. False manaca.—Probably the root of a species of *Brunfelsia*, closely related to the preceding; possibly a mere form or variety of the same. Same source.

5069. Another spurious manaca of unknown botanical origin. Presented by Parke, Davis & Company.

5070. White spurious manaca.—The roots of an undetermined plant. Presented by H. H. Rusby.

5071. Leptandra. Culver's-root, or physic.—The rootstock and roots of *Leptandra virginica* (L.) Nutt. (*Scrophulariaceae*—Figwort Family). Native of eastern North America. Presented by Parke, Davis & Company, of New York.

5072. Another sample of the same, presented by the New York College of Pharmacy.

5073. Rehmannia root.—The powdered and dried root of *Rehmannia lutea* Maxim. (Same family). Native of Japan. From the New York drug market. Presented by H. H. Rusby.

THE MADDER FAMILY (*Rubiaceae*)

5074. Madder. Warence.—The root of *Rubia tinctoria* L. Native of the Mediterranean region and cultivated as a dye. Presented by Lehn & Fink, of New York City.

5075. Brazilian, or Rio, ipecac.—The root of *Uragoga Ipecacuanha* (Brot.) Baill. (See No. 2888.) Presented by Parke, Davis & Company, of New York.

5076. Pure powdered Rio ipecac.— The preceding in the powdered state. Presented by H. H. Rusby.

5077. Another sample of the preceding, containing much sand and earthy matter. Same donor.

5078. Another sample, adulterated with about 5% of damaged wheat flour. Same donor.

5079. Carthagena, or Panama, ipecac.—The root of *Uragoga emetica* (Mutis) Baill. (?) Native of the Republic of Colombia. From the New York drug market. Presented by H. H. Rusby.

5080. Pure powdered Carthagena ipecac.—The preceding in the powdered state. Presented by H. H. Rusby.

5081. Spurious ipecac.—The root of *Uragoga tomentosa* (Aubl.) K. Schum. Native of tropical America. Collected by H. H. Rusby in the lower Orinoco River, Venezuela.

5082. Spurious, or white, ipecac.—The root of *Richardia scabra* L. Native of the southern United States and of tropical America. Imported into New York as ipecac. Presented by H. H. Rusby.

5083. Another sample of the same. From Nicaragua. Presented by Lanman & Kemp, of New York.

5084. Spurious Brazilian ipecac.—The root of *Calceolaria villosissima* St. Hil. (*Violaceae*—Violet Family). Native of Brazil. Imported into the New York market as ipecac. Presented by H. H. Rusby.

5085. Another spurious ipecac of undetermined botanical origin.

5086. Another spurious ipecac of unknown botanical origin. From the New York drug market. Presented by H. H. Rusby.

5087. Oldenlandia root.—The root of *Oldenlandia Boscii* (DC.) Chapm. Native of the southern United States. From Texas. Presented by H. H. Rusby.

5088. Caa cangay guazu.—The root of *Galium trifidum* L. Native of Paraguay. Presented by the Field Museum of Natural History.

5089. Caa cangay mi.—The roots of *G. hirtum* Lam. Native of tropical America. From Paraguay, through the Field Museum of Natural History.

5090. Wild licorice.—The root of *G. circaezans* Michx. Native of the eastern United States. Collected by A. A. Tyler at Easton, Pennsylvania, July, 1898.

THE HONEYSUCKLE FAMILY (*Caprifoliaceae*)

5091. Horse gentian. Wild coffee.—The root of *Triosteum aurantiacum* Bicknell. Native of northeastern North America. Collected by W. N. Clute in Bedford Park, New York, June 23, 1899.

5092. Elderberry root. Sambuci radix.—The root of *Sambucus canadensis* L. (See No. 2344.) Collected by R. Ringe in Bedford Park, New York, June 20, 1899.

5093. Ebulus root. Radix ebuli.—The root of *S. Ebulus* L. Native of Europe. From the New York drug market. Presented by H. H. Rusby.

5094. Valerian. Valeriana.—The rootstock and root of *Valeriana officinalis* L. (See No. 2908.) Native of Europe and cultivated as a drug. Presented by Parke, Davis & Company, of New York.

5095. Another sample of the same. From the New York drug market. Presented by H. H. Rusby.

5096. Japanese valerian.—The rootstock and roots of a Japanese variety of the above species, or of a closely related species. From the New York drug market. Presented by H. H. Rusby.

5097. Bryonia. Bryony. White bryony.—The root of *Bryonia alba* L. or of *B. dioica* L. (See No. 2910.) A commercial sample presented by Parke, Davis & Company.

THE CHICORY FAMILY (*Cichoriaceae*)

5098. Dandelion. Taraxacum.—The root of *Leontodon Taraxacum* L. (See No. 3389.) Presented by Parke, Davis & Company, of New York.

5099. Pure powdered dandelion root.—The preceding in the powdered state. Presented by H. H. Rusby.

5100. Another sample of the same, containing much sand and earthy matter. Same donor.

5101. Chicory. Cichorium.—The root of *Cichorium Intybus* L. (See No. 3301.) Collected by R. S. Williams in the New York Botanical Garden, July, 1919.

THE THISTLE FAMILY (*Carduaceae*)

5102. Black Sampson root. Purple cone flower.—The root of *Brauneria purpurea* (L.) Britton. Native of the southeastern and central United States. Presented by Peek & Velsor, of New York.

5103. Sampson root. Echinacea root.—The root of *Brauneria pallida* (Nutt.) Britton. Native of the southern and western United States. From the New York drug market. Presented by H. H. Rusby.

5104. Indian black-root.—The root of *Pterocaulon undulatum* (Walt.) C. Mohr. Native of America. Collected by R. M. Harper in Bullock County, Georgia, June 27, 1901.

5105. Button snake-root. Blazing star. Gay feather.—The rootstock and roots of *Lacinaria spicata* (L.) Kuntze. Native of the eastern and central United States. Presented by Parke, Davis & Company.

5106. Arnica root. Leopard's-bane.—The rootstock of *Arnica montana* L. Native of Europe and Asia. Presented by Parke, Davis & Company, of New York.

5107. White snake-root.—The root of *Eupatorium urticaefolium* Reichard. Native of the eastern United States. Collected by H. H. Rusby at Montclair Heights, July 3, 1919.

5108. Colt's-foot root. Radix farfarae.—The rootstock of *Tussilago Farfara* L. Native of Europe and Asia and naturalized in North America. From the New York drug market. Presented by H. H. Rusby.

5109. Pellitory root. Roman pellitory. Feverfew.—The root of *Anacyclus Pyrethrum* (L.) DC. Native of northern Africa and cultivated for ornament. Presented by Parke, Davis & Company, of New York.

5110. Adulterated German pellitory root.—The roots of *Anacyclus officinarum* Hayne, native of Germany, adulterated with the stems of the same plant. Presented by H. H. Rusby.

5111. False pellitory.—A root of unknown botanical origin, offered in commerce as a spurious substitute for pellitory. Presented by H. H. Rusby.

5112. Burdock root. *Arctium minus* (Hill) Bern. Native of Europe and naturalized in North America. Collected by J. A. Shafer in Bedford Park, New York, August 29, 1906.

5113. Kidney-root.—The root of *Baccharis pilularis* DC. Native of the Pacific Coast region of the United States and Mexico. From California.

5114. Elecampane. Inula.—The root of *Inula Helenium* L. (See No. 2049.) From the New York drug market. Presented by H. H. Rusby.

5115. Atractylis. Chameleon blanc.—The root of *Atractylis gummifera* L. Native of southern Europe. Exudes a mastic-like resinous substance. Collected by Vice-Counsul Rice, at Messina, Italy. Presented by the United States Treasury Department.

5116. Periprives root.—The root of an undetermined plant of Brazil. From the Field Museum of Natural History.

Barks and Woods

BARKS

5117. White pine bark. Pinus alba.—The inner bark of *Pinus Strobus* L. (*Pinaceae*—Pine Family). Native of eastern and central North America. Presented by Parke, Davis & Company, of New York.

5118. Larch bark. Tamarac bark. Cortex laricis. The inner bark of *Larix laricina* (DuRoi) Koch. (Same family). Native of northern North America. Same donor.

5119. Willow bark. Salix.—The bark of *Salix alba* L. (*Salicaceae*—Willow Family). Native of Europe and Asia and introduced into North America. Collected by H. H. Rusby at Newark, New Jersey, August, 1919.

5120. Poplar bark. Populus.—The bark of *Populus grandidentata* Michx. (Same family). Collected by W. N. Clute in Bedford Park, New York, July, 1899.

5121. Bayberry bark. Wax-myrtle bark.—The bark of *Myrica carolinensis* Mill. (See No. 1611.) Collected by P. Wilson in Bedford Park, New York. June 22, 1899.

5122. Butternut bark. Juglans.—The bark of *Juglans cinerea* L. (See No. 4095.) Collected by P. Wilson in Bedford Park, New York, June 20, 1899.

5123. Black walnut bark.—The bark of *Juglans nigra* L. (See No. 4088.) Presented by Parke, Davis & Company, of New York.

5124. Sweet birch bark.—The bark of *Betula lenta* L. (See No. 1804.) Collected by P. Wilson in Bedford Park, New York, January, 1899.

5125. A commercial sample of the same. Presented by Parke, Davis & Company, of New York.

5126. White birch bark.—The bark of *B. populifolia* Marsh. Native of eastern North America. Collected by P. Wilson in Bedford Park, New York, July, 1899.

5127. European white birch. Shira keba.—The bark of *B. alba* L. Native of northern Europe and Asia. From Japan, through the Field Museum of Natural History.

5128. Yellow birch bark.—The bark of *B. lutea* Michx. Native of eastern and central North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July, 1919.

5129. Alder bark. Tag-alder.—The bark of *Alnus rugosa* (Du Roi) Koch (Same family). Native of eastern North America. Collected by P. Wilson in Bedford Park, New York, June 26, 1899.

5130. White oak bark.—The bark of *Quercus alba* L. (*Fagaceae*—Oak Family). Native of eastern and central North America. Collected by P. Wilson at Bronxville, New York, July 11, 1899.

5131. Rock oak. Chestnut oak bark. Mountain oak. (See No. 1338.) Collected by H. H. Rusby at Montclair Heights, New Jersey, July, 1919.

5132. European oak bark.—The bark of *Q. Robur* L. Native of Europe. Presented by Merck & Company, of New York.

5133. Elm bark. Slippery elm. Ulmus.—The inner bark of *Ulmus fulva* Michx. (*Ulmaceae*—Elm Family). Native of North America. Presented by Parke, Davis & Company, of New York.

5134. Osage orange. Bow-wood.—The bark of *Toxylon pomiferum* Raf. (*Moraceae*—Mulberry Family). Native of the central United States and cultivated for hedges. Collected by P. Wilson in Bedford Park, New York, June, 1899.

5135. Tataybe bark.—The bark of *Maclura Mora* Griseb. (Same family). Native of tropical America. From Paraguay, through the Field Museum of Natural History.

5136. Hackberry bark.—The bark of *Celtis occidentalis* L. (Same family). Native of North America. Collected by H. H. Rusby at Upper Montclair, New Jersey, October 10, 1919.

5137. Barberry root bark. Cortex radicis berberis.—The bark of the root of *Berberis vulgaris* L. (See No. 2541.) From the New York College of Pharmacy.

5138. Another sample of the same.

5139. Barberry stem bark.—The bark of the trunk of the same plant. Presented by Lehn & Fink, of New York.

5140. Tulip-tree bark. White-wood. Liriodendron.—The bark of *Liriodendron tulipifera* L. (*Magnoliaceae*—Magnolia Family). Native of China and of the eastern and central United States. Collected by P. Wilson in Bedford Park, New York, June, 1899.

5141. Magnolia bark.—The bark of one or more species of *Magnolia*. (Same family). Native of the eastern United States. From the New York market. Presented by H. H. Rusby.

5142. Winter's-bark. Wintera. Drimys.—The bark of *Drimys Winteri* Forster (Same family). Native of southern South America. Presented by Parke, Davis & Company.

5143. Ata bark. Custard-apple bark. (See No. 3460.) The bark of *Annona squamosa* L. Presented by H. H. Rusby.

5145. Aratica guazu.—The bark of *Rollinia sylvatica* (St. Hil.) Mart. Same source as preceding.

5146. Musk-wood bark.—The bark of *Atherosperma moschatum* Labill. (*Monimiaceae*—Monimia Family). Native of Australia. Presesented by H. H. Rusby.

THE LAUREL FAMILY (*Lauraceae*)

5147. Greenheart bark. Bibiru. (See No. 2562.) Presented by the New York College of Pharmacy.

5148. Coto bark. (See No. 2560.) Presented by Merck & Company, of New York.

5149. Spurious coto bark.—A bark of unknown botanical origin, offered as a spurious substitute for coto. (Probably in the Magnolia family). Native of Bolivia. Collected by M. Bang and presented by H. H. Rusby.

5150. Another spurious coto bark. Presented by H. H. Rusby.

5151. Powdered spurious coto bark. Same donor.

5152. Paracoto bark. (See No. 2558.) Native of Bolivia. Presented by Merck & Company, of New York.

5153. Pure powdered paracoto. Presented by H. H. Rusby.

5154. Spurious paracoto.—A bark of unknown botanical origin, offered in the New York market as paracoto. Presented by H. H. Rusby.

5155. Powdered spurious paracoto. Presented by H. H. Rusby.

5156. Laurel morati.—The bark of *Nectandra lanceolata* Nees. Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5157. Laurel hu.—The bark of *Nectandra puberula* Nees. Same source as the preceding.

5158. Ceylon cinnamon. (See No. 1497.) Presented by Parke, Davis & Company, of New York.

5159. Powdered Ceylon cinnamon. Presented by H. H. Rusby.

5160. Saigon cinnamon. (See No. 1507 et seq.). Presented by F. H. Leggett & Company, of New York.

5161. Cassia bark. Cassia cinnamon. Cassia lignea. (See No. 1499.) Presented by Parke, Davis & Company, of New York.

5162. Powdered Cassia cinnamon. Presented by H. H. Rusby.

5163. Batavian Cassia.—A superior variety of the same bark, deprived of its corky layer. Presented by H. H. Rusby.

5164. Sassafras root bark.—The bark of the root of *Sassafras Sassafras* (L.) Karst. (See No. 1514.) Presented by Parke, Davis & Company, of New York.

5165. Sassafras stem bark.—The bark of the trunk of the same species. Collected by P. Wilson in the New York Botanical Garden, 1899.

5166. Spice-bush, or fever-bush, bark. Wild allspice.—The bark of *Benzoin aestivale* (L.) Nees. Native of eastern and central North America. Collected by A. A. Tyler at Easton, Pennsylvania, August 15, 1898.

5167. Witch-hazel bark. Spotted alder. Snapping hazel.—The bark of *Hamamelis virginiana* L. (*Hamamelidaceae*—Witch-hazel Family). Native of eastern and central North America. Collected by P. Wilson in Bedford Park, New York, June 26, 1899.

5168. Blackberry root bark. Cortex rubi.—The bark of the root of various species of blackberry (*Rubus*) of the family *Rosaceae*. Native of Europe and North America. A commercial sample, presented by Parke, Davis & Company, of New York.

5169. Soap-bark. Quillaia. (See No. 2597.) Presented by Parke, Davis & Company, of New York.

5170–5173. Four additional samples of the preceding. Presented by the Museum of the British Pharmaceutical Association.

4174. Tollon bark. California holly or Christmas berry.—The bark of *Heteromeles arbutifolia* (Poir.) Roem. (*Malaceae*—Apple Family). Native of the Pacific Coast region of the United States. From the New York College of Pharmacy.

5175. Sorbus bark. Mountain ash bark.—The bark of *Sorbus Aucuparia* L. (Same family). Native of Europe and western Asia and cultivated for ornament.

5176. Wild cherry bark. (See No. 3658.) Presented by Parke, Davis & Company, of New York.

5177. Another sample of the same, deprived of its corky layer, and of good quality. Presented by H. H. Rusby.

5178. Another sample, of excessive age and thickness and not deprived of its corky layer. Same donor.

5179. Choke cherry bark.—The bark of *Padus nana*. (See No. 3654.) Collected by H. H. Rusby at Marlboro, New Hampshire, September, 1919.

5180. Western choke cherry. The bark of *Padus demissa*. (See No. 3656.) Presented by Parke, Davis & Company, of New York.

THE MIMOSA FAMILY (*Mimosaceae*)

Unless otherwise stated, Nos. 5181–5211 are barks from Paraguay, presented by the Field Museum of Natural History, of Chicago.

5181. Curupay ata.—The bark of *Piptadenia Cebil* Griseb. Native of tropical South America.

5182. Curupay curui.—The bark of *P. rigida* Benth.

5183. Curupay ete bark.—The bark of *P. communis* Benth.

5184. Curupay na.—The bark of *Acacia Angico* Mart.

5185. Espinella negra.—The bark of *A. laoense* Hook.

5186. Curupay mi.—The bark of a species of *Stryphnodendron*.

5187. Gogo bark. Sea bean bark.—The bark of *Entada scandens* (L.) Benth. Native of tropical regions. From the Philippine Islands. Presented by Otto Isenstein & Company, of New York City.

5188. Incienso blanco. White incense bark.—The bark of a species of *Myrocarpus*. Native of tropical America.
5189. Inga marati.—The bark of *Inga affinis* DC.
5190. Timbo saayu.—The bark of a species of *Enterolobium*.
5191. Timbo pyta.—The bark of a species of *Enterolobium*.
5192. Timbo marati.—The bark of a species of *Enterolobium*.
5193. Timbo bark.—The bark of *Enterolobium timbana* Mart.
5194. Ground timbo bark.—The preceding, in a ground state.
5195. Tatane bark.—The bark of *Pithecolobium scalare* Griseb. Native of tropical South America.
5196.
5197. Sassy bark. Erythrophloeum.—The bark of *Erythrophloeum guineense* Don. Native of tropical Africa. Presented by Merck & Company, of New York.
5198. Another sample of the same. Presented by Lehn & Fink, of New York.

THE SENNA FAMILY (*Caesalpiniaceae*)

5198.1. Espina de corona bark.—The bark of *Gleditsia amorphoides* (Griseb.) Taub. Native of tropical South America.
5199. Guayacan bark.—The bark of *Caesalpinia melanocarpa* Benth. Native of tropical America.
5200. Cupay bark. Copaiba bark.—The bark of *Copaiba Langsdorffii* (Desf.) Kuntze.
5201. Cupay bark. Copaiba bark.—The bark of "*C. ayabensis*."
5202. Abati timbabi.—The bark of *Hymenaea stilbocarpa* Hayne.
5203. Ibira pyta. Brazil-wood bark.—The bark of *Peltophorum Vogelianum* Walp.
5204. Ybma pyta. Saayu bark.—Another sample of the preceding.

THE PEA FAMILY (*Fabaceae*)

5205. Palo de rosa bark.—The bark of a species of *Machaerium*. Same source and donor.
5206. Ceiba bark.—The bark of *Erythrina Crista-galli* L. Same source and donor.
5207. Jamaica dogwood.—The bark of the root of *Ichthyomethia piscipula* (L.) Kuntze. Native of the West Indies. Presented by Parke, Davis & Company.
5208. Another sample of the same. From the New York drug market. Presented by H. H. Rusby.
5209. Locust bark.—The bark of *Robinia pseudacacia* L. Native of the eastern United States and cultivated for timber and for ornament. Collected by H. H. Rusby near Poughkeepsie, New York, June, 1919.
5210. Trevol bark.—The bark of a species of *Toluifera*. Native of tropical South America.
5211. Another sample of the same.

THE RUE FAMILY (*Rutaceae*)

5212. Angostura, or Cusparia, bark.—The bark of *Cusparia Angostura* (Rich.) Lyons. Native of northern South America. Presented by Parke, Davis & Company, of New York.

5212.1. Another sample of the same. Presented by H. H. Rusby.

5213. Wafer ash bark. Shrubby trefoil. Quinine tree.—The bark of *Ptelea trifoliata* L. Native of North America. From the New York drug market. Same donor.

5214. Southern prickly ash bark.—The bark of *Zanthoxylum Clava-Herculis* L. Native of the southeastern United States. Presented by Parke, Davis & Company.

5215. Another sample of the same, collected by A. H. Curtiss in Florida. (See Herbarium.)

5216. Florida prickly ash.—The bark of *Z. Fagara* L. Native of the Gulf Coast of the United States and the West Indies. Collected by H. H. Rusby at Miami, Florida.

5217. Tembotary hu.—The bark of *Z. hyemale* St. Hil. Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5218. Tembotary saayu.—The bark of *Z. rhoifolium* Lam. Same source and donor as preceding.

5219. Tembotary mi.—Theb ark of a species of *Zanthoxylum.* Same source and donor.

5220. Curatuna saayu.—The bark of a species of *Zanthoxlyum.* Same source and donor.

5221. Simaruba bark.—The bark of *Simaruba amara* Aubl. (*Simaroubaceae*—Quassia Family). Native of northern South America. Presented by Parke, Davis & Company.

5222. Another sample of the same, from the same donor.

5223. Cascara amarga. Honduras bark.—The bark of a species of *Tariri.* (Same family). Native of Central America. From the New York drug market. Presented by H. H. Rusby.

5224. Spurious Cascara amarga.—The bark of an unknown plant, probably a species of *Croton.* (*Euphorbiaceae*—Spurge Family). Native of the Bahama Islands. From the New York drug market. Same donor.

5225. Another spurious sample of the same, of unknown botanical origin.

5226. Another sample of the same.

THE MYRRH FAMILY (*Burseraceae*)

5227. Icy bark. Brazilian elemi bark.—The bark of *Protium Icicariba* (DC.) March. Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

THE MAHOGANY FAMILY (*Meliaceae*)

5228. Cedro colorado. Red Cedrela bark.—The bark of *Cedrela fissilis* Vell. Native of tropical South America. Same source and donor.

5229. Cedron bark.—The bark of a species of *Cedrela.* Native of the eastern Andean region of South America. Collected by H. H. Rusby at Hachaquiri, Bolivia, 1885.

5230. Catigua pyta.—The bark of *Trichilia Catigua* A. Juss. Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5231. Catigua blanca.—The bark of *T. elegans* Juss. Same source and donor.
5232. Catigua morati.—The bark of *Trichilia* sp. Same source and donor.
5233. Azedarach, or Paraisa, bark. Pride of China. China tree.—The bark of *Melia Azedarach* L. Native of Asia and widely cultivated for ornament. Same source and donor.
5234. Another sample of the same, from the New York drug market. Presented by Lehn & Fink.
5235. Cocillana. Guapi.—The bark of *Guarea Rusbyi* (Britton) Rusby. Native of eastern Bolivia. Specimen collected by H. H. Rusby in Bolivia, 1885. From the original tree from which the species was described. (See Herbarium.)
5236. Another sample of the same. Same donor.
5237. Spurious cocillana.—The bark of *G. Bangii*. From the same region. Same donor.
5238. Caaba ata.—The bark of *G. trichilioides* L. Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

THE SPURGE FAMILY (*Euphorbiaceae*)

5239. Cascarilla bark.—The bark of *Croton Eluteria* (L.) Bennett, the sample being of poor quality. Native of the Bahama Islands. A commercial sample, presented by H. H. Rusby.
5240. Another sample of the same, presented by Parke, Davis & Company, of New York.
5241. Sweet bark.—Another sample of the same, collected by Britton and Millspaugh at East Harbin Cay, Berry Island, Bahamas, 1905.
5241.1. Ground Cascarilla bark. Presented by H. H. Rusby.
5241.2. Spurious Cascarilla.—The bark of *Croton glabellus* Muell. Arg. Native of the West Indies. Presented by the Department of Agriculture of Jamaica, West Indies.
5242. Copalchi bark.—The bark of *C. Pseudo-china* Schlecht. Native of Mexico. Acquired by H. H. Rusby in the market of Zamora, Mexico, March, 1910.
5243. Sangre de drago bark. Dragon's-blood bark.—The bark of *C. succiruber* Parodi. Native of tropical South America. From Paraguay, through the Field Museum of Natural History.
5244. Sand-box tree bark. Hura bark.—The bark of *Hura crepitans* L. Native of tropical America. From Surinam, through H. M. B. Moens.

5245. Urundey mi.—The bark of *Astronium Urundeuva* Engl. (*Anacardiaceae*—Sumac Family). Native of tropical America. From Surinam, through H. M. B. Moens.
5246. Smooth sumac bark.—The bark of *Rhus glabra* L. (See No. 1373). Collected at Upper Montclair, New Jersey, July 3, 1919, by H. H. Rusby.
5247. Staghorn sumac bark.—The bark of *R. hirta* (L.) Sudw. (See No. 1375). Collected by H. H. Rusby at Marlboro, New Hampshire, July 25, 1919.
5248. Rhus aromatica. The bark of *Schmaltzia crenata* (Mill.) Greene. Native of the eastern and central United States. Presented by Merck & Co., of New York.

5249. Black alder bark. Prinos. Common winterberry.—The bark of *Ilex verticillata* (L.) A. Gray. (*Ilicaceae*—Holly Family). Native of eastern North America. Collected by P. Wilson in Bedford Park, New York, June 26, 1889.

5250. Wahoo root bark. Euonymus.—The bark of the root of *Euonymus atropurpurea* Jacq. (*Celastraceae*—Staff-tree Family). Native of the eastern and central United States. Presented by Parke, Davis & Company, of New York.

5251. Wahoo stem bark.—The bark of the stem of the same plant. Same donor.

5252. False climbing bittersweet. Celastrus.—The bark of *Celastrus scandens* L. (Same family). Native of eastern and central North America. Presented by Parke, Davis & Company.

5253. Horsechestnut bark. Aesculus.—The bark of *Aesculus Hippocastanum* L. (*Hippocastanaceae*—Horsechestnut Family). Native of Asia and widely cultivated for ornament. Collected by H. H. Rusby at Franklin, New Jersey.

5254. Ybira bark. Soapberry bark.—The bark of *Sapindus divaricatus* Willd. (*Sapindaceae*—Soapberry Family). Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5255. Curupicay.—The bark of *S. acuperium*. Same source and donor.

5256. Cascara sagrada.—The bark of *Rhamnus Purshiana* DC. on a section of the trunk. (*Rhamnaceae*—Buckthorn Family). Native of western North America. Presented by the Oregon Commission at the Pan-American Exposition at Buffalo, New York, 1901.

5257. A commercial sample of the same bark. Presented by Parke, Davis & Company, of New York.

5258. A large quill of the same. Presented by P. E. Anderson & Company, of New York.

5259. The same in a powdered state. From the New York drug market. Presented by H. H. Rusby.

5260. False Cascara sagrada. California coffee-tree.—The bark of *R. californica* Esch. Native of the Pacific Coast region of North America. Collected by H. H. Rusby at Felton, California, August 14, 1909.

5261. Another sample of the same. Collected by H. H. Rusby at Monrovia, California, August 22, 1909.

5262. Buckthorn bark. Frangula.—The bark of *Rhamnus Frangula* L. Native of Europe and Asia, and naturalized in the eastern United States. Presented by Parke, Davis & Company, of New York.

5263. New Jersey tea bark. Red-root bark.—The bark of the root of *Ceanothus americanus* L. (See No. 2211). Collected by Clute and Wilson in Bedford Park, New York, June 30, 1899.

5264. American basswood, or linden, bark. Cortex Tiliae.—The bark of *Tilia americana* L. (*Tiliaceae*—Basswood Family). Native of eastern and central North America. Collected by P. Wilson in Bedford Park, New York, June 21, 1899.

5265. Cotton-root bark.—The bark of *Gossypium punctatum*. (See No. 19). Presented by Parke, Davis & Company.

5266. Another sample of the same. Presented by Merck & Company.

5267. Para todo. For-everything bark.—The bark of *Cinnamodendron axillare* Endl. (*Winteranaceae*—Cinnamodendron Family). Native of tropical America. From Paraguay, through the Field Museum of Natural History.

5268. Canella alba.—The bark of *Canella Winterana* (L.) Gaertn. (Same family). Native of the West Indies. Presented by Lehn & Fink, of New York.

5269. Mezereum, or Mezereon.—The bark of one or more species of *Daphne* (*Thymelaeaceae*—Mezereum Family). Native of southern Europe. Presented by Parke, Davis & Company.

5270. Pomegranate bark. Granatum.—The bark of the root and stem of *Punica Granatum* L. (*Punicaceae*—Pomegranate Family). Native of southern Asia and Europe and cultivated for its fruit. Presented by Parke, Davis & Company.

5271. Nangapiry bark.—The bark of *Eugenia uniflora* L. (*Myrtaceae*—Myrtle Family). Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5272. Another sample of the same, from the same source and donor.

5273. Ybahoi.—The bark of *E. edulis* B. & H. Same nativity and source.

5274. Iba paroity.—The bark of *E. uniflora* L. Same nativity and source.

5275. Guaviyer.—The bark of *E. pungens* Berg. Same nativity and source.

5276. Jambul bark.—The bark of *Syzygium Jambolanum* (Lam.) DC. From the New York drug market. Presented by H. H. Rusby.

5277. Eucalyptus bark.—The bark of *Eucalyptus Globulus* Labill. Native of Australia. From the New York drug market. Presented by H. H. Rusby.

5278. Guava bark.—The bark of *Psidium Guajava* L. Native of tropical South America, and widely cultivated for its fruit. From Paraguay, through the Field Museum of Natural History.

5279. Hercules club bark. Angelica tree bark.—The bark of *Aralia spinosa* L. (*Araliaceae*—Ivy Family). Native of southeastern North America and cultivated for ornament. Collected by J. A. Shafter at Carnot, Pennsylvania, June, 1904.

5280. The same from Somerville, South Carolina. Collected by H. H. Rusby, March 21, 1909.

5281. Tassel-tree bark. Garrya bark.—The bark of *Garrya elliptica* Dougl. (*Cornaceae*—Dogwood Family). Native of the Pacific Coast region of North America. Presented by the New York College of Pharmacy.

5282. Dogwood bark. Flowering cornel bark.—The bark of the trunk of *Cynoxylon floridum* (L.) Raf. (Same family). Native of the eastern United States. Collected by A. A. Tyler at Easton, Pennsylvania, August 17, 1898.

5283. Swamp dogwood. Kinnikinnick.—The bark of *Cornus Amomum* Michx. Native of North America. Collected by R. S. Williams in the New York Botanical Garden, July, 1919.

5284. The same, collected by A. A. Tyler at Easton, Pennsylvania, August 25, 1898.

5285. Canelon blanco.—The bark of a species of *Rapanea* (*Myrsinaceae*—Myrsine Family). Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5286. Canelon morati.—The bark of another species of *Rapanea* (*Myrsinaceae*—Myrsine Family). Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5287. Canelon colorado.—The bark of *R. floribunda* (R. Br.) Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5288. Aguay guazu.—The bark of *Lucuma neriifolia* H. & A. (*Sapotaceae*—Sapota Family). Native of tropical South America, and cultivated for its fruit. From Paraguay, through the Field Museum of Natural History.

5289. Lucuma bark.—The bark of a species of *Lucuma*. Native of tropical South America and cultivated for its fruit. From Paraguay, through the Field Museum of Natural History.

5290. Balata bark. Mimusops bark.—The bark of a species of *Mimusops* related to *M. surinamensis* Miq. (Same family). Native of northern South America. From the Amazon valley. Presented by H. H. Rusby.

5291. Persimmon bark.—The bark of *Diospyros virginiana* L. (*Ebenaceae*—Ebony Family). Native of the southeastern United States. Collected by W. N. Clute at Tuckerton, New Jersey, July 6, 1899.

5292. Another sample of the same, collected by P. Wilson, at Dalton, Georgia, July 29, 1900.

5293. Fringe-tree, or shaving's-tree, bark. Chionanthus.—The bark of *Chionanthus virginica* L. (*Oleaceae*—Olive Family). Native of the southeastern United States. Collected by R. M. Harper, July 12, 1902.

5294. White, or American, ash bark.—The bark of *Fraxinus americana* L. (Same family). Native of eastern North America. Collected by P. Wilson in the New York Botanical Garden, July 10, 1899.

THE DOGBANE FAMILY (*Apocynaceae*)

5295. Dita bark.—The bark of *Alstonia scholaris* (L.) R. Br. Native of Australia and the East Indies. Presented by the New York College of Pharmacy.

5296. White quebracho bark. Aspidosperma.—The bark of *Aspidosperma Quebracho-blanco*. (See No. 2807.1). From Paraguay, through the Field Museum of Natural History.

5297. A commercial sample of the same. Presented by Parke, Davis & Company, of New York.

5298. Sapirangay bark.—The bark of *Tabernaemontana Hystrix* Steud. Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5299. Pao pareira. Geissospermum bark.—The bark of *Geissospermum Vellosii* Allem. (See No. 2805). Presented by Merck & Company, of New York.

5300. Condurango.—The bark of *Marsdenia Condurango* Nichols. (*Asclepiadaceae*—Milkweed Family). Native of Ecuador. Presented by Parke, Davis & Company, of New York.

5301. Guayaba morati.—The bark of *Patagonula* sp. (*Boraginaceae*—Borage Family). Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5302. Taruma guazu.—The bark of *Vitex montividensis* Cham. (*Verbenaceae*—Verbena Family). Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5303. Tonga bark. Yaro. —The bark of *Premna taitensis* DC. (Same family). Native of the Fiji Islands. Presented by Parke, Davis & Company, of New York.

5304. Para paray guazu.—The bark of a species of *Jacaranda* (*Bignoniaceae*—Trumpet-creeper Family). Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

5305. Bean-tree or cigar-tree bark. Catalpa.—The bark of *Catalpa Catalpa* (L.) Karst. (Same family). Native of the eastern United States and cultivated for ornament. Collected by H. H. Rusby at Newark, New Jersey, July, 1919.

5306–5311. The barks of species of *Tabebuia* (Same family) from Paraguay, through the Field Museum of Natural History.

5306. Lapacho bark.—The bark of *Tabebuia Avellanedae* Lorentz.

5307. Lapacho amarillo.—The bark of *T. flavescens* B. & H.

The following four are from undetermined species:

5308. Lapacho negro.

5309. Lapacho crespo.

5310. Lapacho crespo.

5310. Another sample of the same in the ground state.

5311. Lapacho colorado.

5312. Bignonia bark.—The bark of a species of *Bignonia*. (Same family). Native of Bolivia. Collected by H. H. Rusby at Ribaralta, Bolivia, 1887.

THE MADDER FAMILY (*Rubiaceae*)

5313. Pale Cinchona bark.—The bark of *Cinchona officinalis* L. Native of Ecuador and cultivated as a drug. The sample contains 2% of alkaloid, a little more than half of it quinine. Grown at Cinchona, Jamaica.

5314. Another sample, from the same locality.

5315. Another sample of the same, grown in Ecuador. Presented by Parke, Davis & Company, of New York.

5316. Another sample of the same. From the New York drug market.

5317. Another sample, grown in Java. From the New York drug market. Presented by H. H. Rusby.

5318. Another sample, from the same source as the preceding.

5319. Another sample of pale bark, which is probably a hybrid of this with some other species. From the New York drug market. Presented by Parke, Davis & Company, of New York.

5320. Brown huanuoo bark.—The bark of a variety of the same species. Presented by the New York College of Pharmacy.

5321. Quilled red Peruvian bark.—The bark of *C. succirubra* Pavon. Native of Peru and cultivated as a drug. Grown in Java. From the New York drug market. Presented by H. H. Rusby.

5322. Another sample from the same source. Presented by Parke, Davis & Company.

5323. Another sample, grown in Africa. Same donor.

5324. Another sample, grown in Jamaica. Same donor.

5325. Another sample, grown in Ceylon. Presented by the New York College of Pharmacy.

5326. The same in the powdered state. From the New York drug market. Presented by H. H. Rusby.

5327. Calisaya bark. Yellow Cinchona.—The bark of *C. Calisaya* Wedd. Native of Bolivia and southern Peru, and cultivated as a drug. From cultivated plants, grown in Bolivia. Presented by Parke, Davis & Company.

5328. Another sample of the same, collected by H. H. Rusby in March, 1885, from cultivated trees in Mapiri, Bolivia.

5329. Powdered calisaya or yellow bark.—The preceding, in powdered form. Presented by H. H. Rusby.

5330. Flat, or tabla, calisaya.—The inner bark of the preceding species, pressed and dried in a flat condition. Grown in Bolivia. Presented by H. H. Rusby.

5331. Another sample of the same, from cultivated trees, grown in Java. From the New York drug market. Presented by H. H. Rusby.

5332. Powdered hybrid calisaya bark.—The powdered bark of a hybrid of *C. Calisaya* with some other species. From the New York drug market. Presented by H. H. Rusby.

5333. Pitaya bark.—The bark of *C. cordifolia* Mutis. Native of the Andes of Colombia. From the New York drug market. Presented by the New York College of Pharmacy.

5334. Terciopelos quina bark.—Another specimen of the preceding species, collected by H. H. Rusby in the State of Huila, Colombia, August, 1917.

5334.1. The preceding, in the powdered state.

5335. Fibrous Colombian or Cartagena bark.—The bark of *C. lancifolia* Mutis. Native of the Andes of Colombia. Collected by H. H. Rusby in the State of Huila, Colombia, August, 1917.

5335.1. The preceding, in the powdered state.

5336. Soft pitaya bark.—The bark of *C. pitayensis* Wedd. Native of the Andes of Colombia. Collected by H. H. Rusby in the State of Huila, Colombia, August, 1917.

5337. The preceding, in the powdered state.

5338. Maracaibo bark. Spurious yellow bark.—The bark of a species of *Cinchona* (?). Native of the Andes of Colombia and Venezuela. This bark is often substituted for calisaya, but is very inferior, containing little or no quinine. A commercial sample, presented by Parke, Davis & Company.

5339. Another sample of the same from the New York drug market. Presented by H. H. Rusby.

5340. Another sample of the same, presented by the New York College of Pharmacy.

5341. "Cascarilla" bark. Spurious Cinchona bark.—A bark of unknown botanical origin, probably in the Cinchona family, but containing only 0.15 per cent of an undetermined alkaloid. Offered in the New York market as a spurious substitute for Cinchona. Presented by H. H. Rusby.

5342. Spurious Cinchona.—A bark of unknown botanical origin, offered in the New York market as Cinchona. Presented by H. H. Rusby.

5343. Another spurious Cinchona. Same donor.

5344. Cuprea bark.—The bark of *Remijia pedunculata* Fluckiger. Native of Colombia and Venezuela. Collected by F. W. Pennell at Villaviciensio, Colombia, August, 1917.

5344.1. The preceeding, in the ground state.

5345. Psychotria bark.—The bark of *Psychotria undata* Jacq. Native of Florida. Collected by J. K. Small at Miami, Florida.

5346. Another sample of the same, collected by H. H. Rusby in the same locality.

5347. Psychotria bark.—The bark of *P. Sulzneri* Small. Same source and donor as the preceding.

5348. Wild licorice bark. Buttonbush bark.—The bark of the root of *Cephalanthus occidentalis* L. Native of the eastern United States. Collected by W. N. Clute in Bedford Park, New York, June 26, 1899.

5349. Pinckneya bark. Georgia bark.—The bark of *Pinckneya pubens* Michx. Native of the southeastern United States. Collected by R. M. Harper in Georgia, August 29, 1900.

5350. Genipa bark. Marmalade bark. Seven-year apple.—The bark of *Genipa americana* L. (See No. 4020). From Paraguay, through the Field Museum of Natural History.

THE HONEYSUCKLE FAMILY (*Caprifoliaceae*)

5351. Black haw stem bark.—The bark of the trunk of *Viburnum prunifolium* L. (See No. 4023). Collected by P. Wilson in Bedford Park, New York.

5352. Another sample of the same. Collected by H. H. Rusby.

5353. Black haw root bark.—The bark of the root of the preceding species. Collected by H. H. Rusby at Upper Montclair, New Jersey, September 27, 1919.

5354. Black haw root bark.—The bark of the root of *V. Lentago* L. (See No. 4021). Collected by H. H. Rusby in the New York Botanical Garden, September, 1919.

5355. Black haw stem bark.—The bark of the stem of the preceding species. Same locality and collector.

5356. Possum haw bark.—The bark of *V. obovatum* Walt. Native of the southeastern United States. Collected by H. H. Rusby at Somerville, South Carolina, March 18, 1909.

5357. Cramp bark. High bush cranberry bark.—The bark of *V. Opulus* L. (See No. 4026). A commercial sample, presented by Peek & Velsor, of New York.

5358. Cramp bark.—Another sample of the same. Collected by H. H. Rusby, at Manchester, Vermont, October 5, 1912.

5359. Spurious cramp bark.—The bark of *Acer spicatum* Lam. (*Aceraceae*—Maple Family). Native of eastern and central North America. Commonly sold under the name of cramp bark, but having none of its properties.

5360. Elderberry bark.—The stem bark of *Sambucus canadensis* L. Native of eastern and central North America. Collected by P. Wilson in Bedford Park, New York, June 20, 1899.

5361. Sauco bark.—The bark of *Sambucus australis* C. & S. Native of tropical South America. From Paraguay, through the Field Museum of Natural History.

WOODS

5362. Sea-girdle. Sea-staff. Sea-wand stems. Laminaria.—The stems of the seaweed, *Laminaria Cloustoni* Edmonston. (*Laminariaceae*—Laminaria Family). Native of the shores of northern oceans. From the New York drug market. Presented by Merck & Company.

5363. Juniper wood. Lignum juniperi.—The wood of *Juniperus communis* L. (See No. 1757). Presented by Merck & Company.

5364. European Ephedra.—The stems of *Ephedra helvetica* Hook. & Thomp. (*Gnetaceae*—Gnetum Family). Native of southern Europe, presented by Merck & Company.

5365. Tonga stem. Tonga vine.—The stem of *Epipremnum mirabile* Schott. (*Araceae*—Arum Family). Native of the Fiji Islands. A commercial sample, presented by H. H. Rusby.

5366. Sandalwood. White sandalwood.—*Santalum album.* (See No. 1812.) Presented by Parke, Davis & Company.

5367. Another sample of the same, presented by H. H. Rusby.

5368. Sassafras medulla, or pith.—The pith of the shoots of *Sassafras Sassafras* (L.) Karst. (See No. 1514). Presented by Peek & Velsor.

5369. Sassafras wood.—The wood of the preceding species. Collected by H. H. Rusby at Franklin, New Jersey, September, 1919.

5370. Pernambuco Brazil wood.—The wood of *Caesalpinia echinata* Lam. (*Caesalpiniaceae*—Senna Family). Native of Brazil. Presented by Merck & Company.

5371. Logwood. (See No. 1282). Presented by Parke, Davis & Company.

5372. Red saunders. Red sandalwood.—The heart wood of *Pterocarpus santalinus* L. (See No. 1291). From the New York drug market. Presented by H. H. Rusby.

5373. Guaiac wood. (See No. 1239). Presented by Parke, Davis & Company.

5374. Quassia wood. Jamaica quassia. (See No. 2701). Presented by Parke, Davis & Company.

5375. Surinam quassia. (See No. 2702). Presented by H. H. Rusby.

5376. Chewstick. (See No. 2155.) Presented by Parke, Davis & Company.

5377. Cactus stems. Cereus grandiflorus.—The stems of *Selenicereus grandiflorus* (L.) Britton & Rose (*Cactaceae*—Cactus Family). Native of Jamaica. From the New York drug market. Presented by H. H. Rusby. Some pieces of the sample are decayed.

5378. Bitter-sweet. Dulcamara.—The young stems of *Solanum Dulcamara* L. (*Solanaceae*—Potato Family). Native of the north temperate zone. Collected by H. H. Rusby.

5379. A commercial sample of the same. Presented by Parke, Davis & Company.

5380. Stipites huaco, or guaco.—The twigs of *Mikania amara* Willd. (*Carduaceae*—Thistle Family). Native of tropical America. Presented by Merck & Company.

LEAVES

5381. American, or creeping, yew. Taxus.—The leaves of *Taxus canadensis* Marsh. (*Taxaceae*—Yew Family). Native of northeastern North America. Collected by H. H. Rusby at Alder Lake, New York.

5382. Another sample of the same, collected by H. H. Rusby at Lake Perchand, Quebec, August 9, 1911.

5383. Cogan.—The leaves of *Imperata arundinacea* Cyrilli (*Gramineae*—Grass Family). Native of Asia. Grown in the Phillippine Isands. Presented by E. B. Southwick.

5384. Lily-of-the-Valley. *Convallaria majalis* L. (*Convallariaceae*—Lilly-of-the-Valley Family). Presented by Parke, Davis & Company.

5385. Box holly. Prickly box. Butcher's-broom. Sweet broom.—The leaves of *Ruscus aculeata* L. (*Liliaceae*—Lily Family). Native from the Mediterranean region to central Europe. From the New York market. Presented by H. H. Rusby.

5386. Carrion flower leaves.—The leaves of *Smilax herbacea* L. (*Smilaceae*—Sarsaparilla Family). Native of eastern and central North America. Collected at Williamsbridge, New York, September 5, 1904, by J. A. Shafer.

5387. Beong.—The leaves of *Crinum asiaticum* L. (*Amaryllidaceae*—Amaryllis Family). Native of eastern Asia. From the Philippine Islands, through E. B. Southwick.

5388. Ginger yam leaf.—The leaves of a species of *Dioscorea* (*Dioscoreaceae*—Yam Family). Native of eastern Asia and extensively cultivated. From the Philippine Islands, by E. B. Southwick.

5389. Betel leaves. Betel pepper leaves. (See No. 2142). From Siam, through the Field Museum of Natural History.

5390. Matico.—The leaves of *Piper angustifolium* R. & P. (Same family). Native of the Andes of Bolivia and Peru. Collected by H. H. Rusby in 1885, near Coroico, Bolivia.

5391. A commercial sample of the same, presented by Parke, Davis & Company, of New York.

5392. Spurious matico.—The leaves of *P. Mandoni* C. DC., offered in the New York market as "matico." Presented by J. L. Hopkins & Company.

5393. Another spurious matico, consisting of the mixed leaves of several species of *Piper*. From the New York market. Presented by H. H. Rusby.

5394. The same, in the powdered state. From the same source.

5395. Bay-berry. Wax-berry. Candle-berry.—The leaves of *Myrica carolinensis* Mill. (See No. 1611). Collected in Bedford Park, New York, by Percy Wilson, June 23, 1899.

5396. Sweet fern. Fern-gale. Shrubby fern.—The leaves of *Comptonia peregrina* (L.) Coulter (Same family). Native of northeastern North America. Collected by H. H. Rusby at Ulsterville, New York

5397. Butternut leaves.—The leaves of *Juglans cinerea* L. (See No. 4095). Collected by J. A. Shafer in Bronx Park, New York, September 20, 1904.

5398. European walnut leaves. Folia juglandis.—The leaves of *J. regia*. (See No. 4101). From Munich, Bavaria.

5399. European white birch leaves. Folia betulae.—The leaves of *Betula alba* L. (*Betulaceae*—Birch Family). Native of Europe and cultivated for ornament. A commercial sample, presented by H. H. Rusby.

5400. Beech leaves.—The leaves of *Fagus grandifolia* Ehrh. (See No. 3334). Collected in Williamsbridge, New York, September 5, 1904, by Q. T. Shafer.

5401. American chestnut leaves. (See No. 4140). Collected by Percy Wilson in Bronx Park, New York, 1899.

5402. Another sample of the same, collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

5403. South American pokeberry leaves.—The leaves of *Phytolacca dioica.* (*Phytolaccaceae*—Pokeberry Family). Native of tropical America. From Paraguay, through the Field Museum of Natural History.

5404. Liver-leaf. Hepatica.—The leaves of *Hepatica Hepatica* (L.) Karst. (*Ranunculaceae*—Buttercup Family). Native of eastern North America and northern Europe and Asia. Collected by Percy Wilson in Bedford Park, New York, June 15, 1899.

5405. A commercial sample of the same, presented by R. T. Hilliers Sons Company, of New York City.

5406. Virgin's-bower. Nigger's-wool.—The leaves of *Clematis virginiana* L. (Same family). Native of the eastern United States. Collected by P. Wilson in Bedford Park, New York, in 1899.

5407. Epimedium leaves.—The leaves of a species of *Epimedium* (*Berberidaceae*—Barberry Family). Native of Japan. Cultivated at Newark, New Jersey, by H. H. Rusby, June 21, 1919.

5408. Boldo leaves.—The leaves of *Boldu Boldus* (Molino) Lyons (*Monimiaceae*—Monimia Family). Native of Chile. A commercial sample. Presented by Parke, Davis & Company, of New York City.

5409. Spice-bush or fever-bush.—The leaves of *Benzoin aestivale* (L.) Nees (*Lauraceae*—Laurel Family). Native of northeastern and central North America. Collected by Q. T. Shafer, in the New York Botanical Garden, September 20, 1904.

5410. European, or royal, bay. Laurel. (See No. 1512). A commercial sample presented by Parke, Davis & Company, of New York.

5411. Laurel-tree leaves. California laurel.—The leaves of *Umbellularia californica* (W. & A.) Nutt. (Same family). Native of the Pacific Coast of North America. Presented by the New York College of Pharmacy.

5412. Sassafras leaves. (See No. 1514). Collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

5413. Scurvy-grass. Cochlearia. (See No. 1855). A commercial sample presented by H. H. Rusby.

5414. Black currant leaves.—The leaves of *Ribes nigrum* L. Native of Europe and cultivated for its fruits. A commercial sample, presented by H. H. Rusby.

5415. Another sample of the same, grown in the New York Botanical Garden, August 6, 1904.

5416. Witch, or snapping, hazel. Spotted alder. Winter-bloom.—The leaves of *Hamamelis virginiana* L. (See No. 5167.) Collected by P. Wilson in Bedford Park, New York, June 6, 1899.

THE ROSE FAMILY (*Rosaceae*)

5417. Steeple-bush. Pink hardhack.—The leaves of *Spiraea tomentosa* L. Native of eastern North America. Collected by W. N. Clute at Quaker Ridge, New Jersey.

5418. Hardhack. Meadow-sweet. Bridewort.—The leaves of *S. salicifolia* L. Native of the north temperate zone. Collected by R. S. Williams in the New York Botanical Garden, July 18, 1919.

5419. Lady's mantle. Deer-cup.—The leaves of *Alchemilla vulgaris* L. Native of Europe and naturalized in the northeastern United States. Collected in the New York Botanical Garden by J. A. Shafer, August 22, 1904.

5420. Black raspberry leaves. Black-cap (See No. 3549).—The leaves of *Rubus occidentalis* L. A commercial sample, presented by Parke, Davis & Company, of New York.

5421. European red raspberry (See No. 3553).—The leaves of *R. Idaeus* L. Grown by H. H. Rusby at Newark, New Jersey, November 20, 1919.

5422. Strawberry leaves.—The leaves of a cultivated variety of *Fragaria*. Grown by H. H. Rusby at Newark, New Jersey, November 20, 1919.

5423. Tyone leaves. California holly leaves. The leaves of *Heteromeles arbutifolia* (Poir.) Roem. (See No. 3619). Presented by the New York College of Pharmacy.

5424. Cherry laurel leaves. Cherry bay (See No. 1861).—A commercial sample, presented by Lehn & Fink, of New York City.

5425. Peach leaves.—The leaves of *Amygdalus Persica* L. (See No. 3621). Collected by Q. T. Shafer at Williamsbridge, New York, August 15, 1904.

5426. Arabisco leaves.—The leaves of a cultivated species of *Acacia*. From the United States Consul at Guayaquil, Ecuador.

THE MIMOSA FAMILY (*Mimosaceae*)

5427. Indian senna.—The leaflets of *Cassia angustifolia* Vahl. Native of India and eastern Africa, and cultivated. Presented by Parke, Davis & Company.

5428. Tinnivelly senna. A fine cultivated form of the preceding. Same donor.

5429. Another sample of the same, presented by Merck & Company, of New York.

5430. Powdered India senna.—The preceding leaves in the powdered state. A commercial sample, presented by H. H. Rusby.

5431. Adulterated India senna.—The same leaves, adulterated with those of *Cracca villosa* Grev. From the New York drug market. Presented by H. H. Rusby.

5432–5441 represent Alexandria senna, the leaflets of *Cassia acutifolia* Delile, native of northeastern Africa. They show the various stages in preparation after collection. Presented by A. N. Andrus & Company, of New York City.

5432. Leafy and flowering branches.

5433. Leaves in bulk, as received from field collectors.

5434. The leaves after being cleaned (Quality No. 1.)

5435. The same (Quality No. 2.)

5436. Various materials removed in cleaning.

5437. Dust sifted out, much of it good for use.

5438. Diseased leaves removed by picking.

5439. Waste matter removed from the crude leaves.

5440. Sand removed by sifting.

5441. Wood of the tree.

5442. Pure powdered Alexandria senna, presented by H. H. Rusby.

5443. The same containing much sand. Same donor.

5444. Powdered senna siftings.—Small particles of leaves, stems, etc., sifted out from the senna, and containing much sand, reduced to powder.

5445. Broken senna.—Portions of senna leaves of smaller size than half leaves. Usually pure and of good quality. Presented by H. H. Rusby.

5446. Senna siftings.—The fine portions sifted out of senna, containing much impurity in the form of stem-pieces, seeds, sand, etc. Presented by H. H. Rusby.

5447. Senna baladi. Wild senna.—The leaflets of *C. obovata* Collad. Native of eastern and central Africa. Used to adulterate senna. A commercial sample, presented by H. H. Rusby.

5448. Spurious senna.—The leaflets of *C. lanceolata*. Native of northern Africa. From the New York drug market. Presented by H. H. Rusby.

5449. American senna.—The leaflets of *C. marylandica* L. Native of the eastern and central United States. Collected by J. A. Shafer in the New York Botanical Garden, August 19, 1904.

5450. Colombian senna.—The leaflets of *Cracca cathartica* (Sesse & Moc.) Urban. Native of the Republic of Colombia, where it is used as a substitute for senna. From the New York drug market. Presented by H. H. Rusby.

5451. Honey locust leaves.—The leaflets of *Gleditsia triacanthos* L. Native of eastern North America. At one time the subject of a fraudulent claim that they contained cocaine. Collected by William Lange in Bedford Park, New York, June 21, 1899.

5452. Pointed-leaved tick trefoil.—The leaves of *Meibomia grandiflora*. (Walt.) Kuntze. (*Fabaceae*—Pea Family). Native of eastern North America. Collected by A. A. Tyler at Easton, Pennsylvania, in 1898.

5453. Tasmanian hops.—The leaves of *Daviesia latifolia* Ait. f. (Same family). Native of Australasia, where they are used as a substitute for hops. A commercial sample, presented by Parke, Davis & Company, of New York.

5454. Wood sorrel. Sour or cuckoo's clover. (See No. 2677.) Collected by H. H. Rusby at Marlboro, New Hampshire, July 24, 1919.

5455. Huja-huja. Damong-huja.—The leaves of *Biophytum sensitivum* DC. (Same family). Native of eastern Asia. From the Philippine Islands, by E. B. Southwick.

5456–5464 represent coca, the leaves of *Erythroxylon Coca* Lam. (*Erythroxylaceae*—Coca Family), and related products.

5456. Huanuco coca. Erythroxylon. Large brown coca. (See No. 2681.) Collected by H. H. Rusby, in Yungas, Bolivia, in April, 1885.

5457. A commercial sample of the same, donated by Parke, Davis & Company, of New York.

5458. Cuzco coca.—The same, grown near Cuzco, Peru. A commercial sample. Presented by H. H. Rusby.

5459. Pure powdered Huanuco coca. Presented by H. H. Rusby.

5460. The same, adulterated with senna leaves. A commercial sample. Presented by H. H. Rusby.

5461. Leafy flowering branch of the same. Grown in the conservatory of the New York Botanical Garden.

5462. Small, or Truxillo, coca leaves.—The leaves of *E. truxillense* Rusby. Native of the Peruvian Andes and cultivated. Grown in Ceylon. From the New York market. Presented by H. H. Rusby.

5463. Another sample of the same. From the N. Y. drug market. Presented by Parke, Davis & Company.

5464. Haya. Ipadu. Colombian coca.—A species of *Erythroxylon*, grown in the Republic of Colombia. Acquired in Colombia in 1917 and presented by H. H. Rusby.

5465. Spurious coca.—The leaves of *E. areolatum* L. Native of the West Indies. Grown in Jamaica and presented by H. H. Rusby.

5466. Bang's coca.—The leaves of *E. Bangii* Rusby, which do not contain cocaine. Native of Bolivia. Collected by M. Bang in Bolivia, in 1892. Presented by H. H. Rusby.

THE RUE FAMILY (*Rutaceae*)

5467. Rue. Garden rue. Ruta. (See No. 1908.) A commercial sample, presented by Parke, Davis & Company, of New York.

5468. Buchu. Short buchu. Birch-leaved buchu. A commercial sample, presented by Parke, Davis & Company.

5469. Powdered short buchu. The preceding, in the powdered state. Presented by H. H. Rusby.

5470. The same adulterated with the stems of the plant. Same donor.

5471. Spurious short buchu. Round buchu.—The leaves of *Barosma crenulata* (L.) Hook. Native of South Africa. From the New York drug market. Same donor.

5472. Another sample of the same species, of different form. From the same country and donor.

5473. Another spurious buchu.—The leaves of an undetermined species of *Barosma*. Same home and donor.

5474. Another spurious buchu.—The leaves of *B. graveolens* G. Don. Same home and donor.

5475. Long buchu.—The leaves of *B. serratifolia* (Gaertn.) Willd. Same home. Presented by Parke, Davis & Company.

5476. Adulterated long buchu.—Long buchu adulterated with stems, chopped into small pieces to escape detection. Presented by H. H. Rusby.

5477. False long buchu.—The leaves of *Empleurum serrulatum* Sol. Native of South Africa. Presented by A. C. Jenkins, of New York.

5478. Another sample of the same. From the New York drug market. Presented by H. H. Rusby.

5479. Bitter orange leaves. Folia Aurantii. (See No. 1556.) Presented by Merck & Company, of New York.

5480. Naranja hehe. Sweet orange leaves.—The leaves of *Citrus aurantium* L. Same home. From Paraguay, through the Field Museum of Natural History.

5481. Small jaborandi. Pilocarpus.—The leaflets of *Pilocarpus microphyllus* Stapf. (See No. 2690 and 2691.)

5482. A powdered form of the preceding. Presented by Muth Brothers & Company, of Baltimore, Maryland.

5483. A powdered form presented by J. L. Hopkins & Company, of New York City.

5484. Large-leaved jaborandi.

5485. Pernambuco jaborandi. From the New York drug market.

5486. Spurious jaborandi.—The leaves of a species of *Pilocarpus* found in Brazil.

5487. Aracati jaborandi.—The leaves of *P. spicatus* A. St. Hil. Native of Brazil. Presented by the New York College of Pharmacy.

5488. Spurious jaborandi.—The leaves of a species of *Pilocarpus* found in South America.

5489. Spurious jaborandi.—The leaves of a species of *Pilocarpus* found in South America.

5490. Ailanthus leaves (*Simaroubaceae*—Ailanthus Family), from Newark, New Jersey, collected by H. H. Rusby.

5491. Aquedita. Cuban quinine.—The leaves of *Picramnia pentandra* Sw. (Same family). Native of the West Indies. Presented by the New York College of Pharmacy.

5492. Castor leaves.—The leaves of *Ricinus communis* L. (*Euphorbiaceae*—Spurge Family). Native of East India and largely cultivated. Collected by J. A. Shafter at Williamsbridge, New York City, September 22, 1904.

5493. Box leaves. Collected by Williams and Wilson in the New York Botanical Garden.

5494. Poison ivy leaves. Collected by P. Wilson in Bedford Park, New York City.

5495. The leaves of *Pistacia Lentiscus* L. From southern Europe.

5496. The leaves of *Rhus glabra* L. From New York City.

5497. The leaves of *Schinus terebinthifolius*.

5498. Maté. Paraguay tea. From Paraguay, South America.

5499. Jersey tea, *Ceanothus americana* L., from the New York Botanical Garden.

5500. Virginia creeper leaves. From New York City.

5501. Grape leaves. From Newark, New Jersey.

5502. Tincture of the leaves of *Thespesia populnea*. From St. Thomas, Danish West Indies. Used for gout and heart trouble.

5503–5505. The leaves of *Althaea officinalis* L. Presented by Parke, Davis and Company.

5506. Damiana leaves, from *Turnera diffusa* Willd. Native of tropical America Presented by Parke, Davis and Company.

5507. Damiana siftings.—The fine material sifted our from the leaves of a variety of. the preceding species found in Mexico. From the New York drug market.

5508. Papaya, or papaw, leaves, from *Carica Papaya* L. Native of tropical America.

5509. Another sample of the preceding, presented by the New York College of Pharmacy.

5510. Purple loosestrife. Purple willow-herb.—The leaves of *Lythrum Salicaria* L. (*Lythraceae*—Loosestrife Family). Native of Europe and Asia and naturalized in North America.

5511. Henna leaves. Egyptian privet.—The leaves of *Lawsonia inermis* L. (Same family). Native of Africa, Asia, and Australia. Presented by H. H. Rusby.

5512. Spurious henna.—The leaves of another shrub, in the same family, used to fraudulently substitute henna. From the New York market. Presented by H. H. Rusby.

5513. Combretum leaves.—The leaves of *Combretum sundaicum* Miq. (*Combretaceae*—Combretum Family). Native of the East Indies. Presented by Peek & Velsor.

5514. Eucalyptus. Blue gum.—The leaves of *Eucalyptus Globulus* Labill. (See No. 1932.) Presented by Parke, Davis & Company.

5515. Jamaica bay leaves. Myrcia.—The leaves of *Amomus caryophyllata* (Jacq.) Krug. & Urb. (See No. 1942.) Presented by Lehn & Fink, of New York City.

5516. A sample of the same collected by J. A. Shafer at Montserrat, West Indies, February, 1907.

5517. Chequen. Arrayan.—The leaves of *Eugenia Chequen* Molino. (Same family.) Native of southwestern South America. Collected by H. H. Rusby at Vina del Mar, Chile, 1885.

5518. Great willow herb. Fireweed.—The leaves of *Chamaenirion angustifolium* (L.) Scop. (*Onagraceae*—Evening Primrose Family). Native of eastern and central North America. Collected by Clute & Wilson at Lindenhurst, Long Island, July 21, 1899.

5519. Ivy leaves.—The leaves of *Hedera Helix* L. (*Araliaceae*—Ivy Family). Native of Europe. Cultivated by H. H. Rusby at Newark, New Jersey, June 30, 1919.

5520. Parsley leaves.—The leaves of *Apium Petroselinum* L. (*Ammiaceae*—Parsley Family). Native of Europe. Cultivated by H. H. Rusby at Newark, New Jersey, October, 1919.

5521. Another variety of the same species. From the New York vegetable market. Presented by H. H. Rusby.

5522. Conium leaves. Poison hemlock. (See No. 2764.) Presented by Parke, Davis & Company.

5523. Quinine bush leaves.—The leaves of *Garrya Fremontii* Torr. (*Cornaceae*—Dogwood Family). Native of the western United States. Presented by the New York College of Pahrmacy.

THE HEATH FAMILY (*Ericaceae*)

5524. Madrone leaves.—The leaves of *Arbutus Menziesii* Pursh. Native of northwestern North America. Presented by the New York College of Pharmacy.

5525. Sour-wood, or sorrel-tree, leaves.—The leaves of *Oxydendrum arboreum* (L.) DC. Native of the southeastern United States. Collected by P. Wilson at Dalton, Georgia, August 13, 1900.

5526. Uva-ursi. Bearberry leaves.—The leaves of *Uva-ursi Uva-ursi* (L.) Britton. (See No. 2780.) Presented by Parke, Davis & Company.

5527. Another sample of the preceding, from the New York drug market. Presented by H. H. Rusby.

5528. Manzanita leaves.—The leaves of *Arctostaphylos glauca* Lindl. Native of California. Presented by Parke, Davis & Company.

5529. Stagger-bush leaves. The leaves of *Neopieris mariana* (L.) Britton. Native of the eastern United States. Collected by Clute and Wilson at Lindenhurst, Long Island, in August, 1899.

5530. Wintergreen. Checkerberry. (See No. 1990.) Presented by J. L. Hopkins & Company, of New York City.

5531. Trailing arbutus. Gravel weed. May flower.—The leaves of *Epigaea repens* L. Native of eastern North America. Collected by W. N. Clute, in southern New Jersey, July 2, 1899.

5532. Labrador tea (See No. 1993). Presented by Parke, Davis & Company.

5533. Another sample of the preceding, presented by F. E. Fenno, of Apalachia, New York.

5534. Mountain laurel or calico bush leaves.—The leaves of *Kalmia latifolia* L. Native of northeastern North America. Collected by A. A. Tyler at Easton, Pennsylvania, August 13, 1898.

5535. Lambkill leaves.—The leaves of *K. angustifolia* L. Native of eastern North America. Collected by W. N. Clute at Atsion, New Jersey, July 4, 1899.

5536. Great laurel or Rhododendron leaves.—The leaves of *Rhododendron maximum* L. Native of northeastern North America. Collected in the New York Botanical Garden, August 18, 1909, by R. S. Williams.

5537. Chimaphila. Pipsissewa.—The leaves of *Chimaphila umbellata* (L.) Nutt. (*Pyrolaceae*—Pyrola Family). Native of the north temperate zone. A commercial sample, presented by Peek & Velsor, of New York City.

5538. Balata, or bullet-tree, leaves.—The leaves of *Mimusops surinamensis* Miq. (*Sapotaceae*—Sapota Family). Native of northern South America. Collected by H. H. Rusby in the delta of the Orinoco River, Venezuela, in 1896.

5539. Privet leaves. (See No. 2789). Collected by J. A. Shafer in the New York Botanical Garden, September, 1904.

5540. Lilac leaves. (See No. 2790). Collected by Q. T. Shafer at Williamsbridge, New York, August 15, 1904.

5541. Buckbean. Bogbean. Menyanthes. Trifolii fibrini.—The leaves of *Menyanthes trifoliata* L. (*Menyanthaceae*—Buckbean Family). Native of the north temperate zone. A commercial sample. Presented by Parke, Davis & Company.

5542. Oleander leaves.—The leaves of *Nerium Oleander* L. (*Apocynaceae*—Dogbane family). Native of the Mediterranean region and cultivated for ornament. Presented by Merck & Company, of New York.

5543. Gymnema leaves. (See No. 2829.)

5544. Yerba santa. Eriodictyon.—The leaves of *Eriodictyon californicum* (H. & A.) Greene (*Hydrophyllaceae*—Water-leaf Family). Native of the southwestern United States and Mexico. Presented by Parke, Davis & Company.

5545. The preceding, in a ground state. From the New York drug market. Presented by H. H. Rusby.

5546. Lungwort leaves. Pulmonaria. Sage of Bethlehem or Jerusalem.—The leaves of *Pulmonaria officinalis* L. (*Boraginaceae*—Borage Family). Native of Europe and cultivated, and naturalized in the United States. Presented by Parke, Davis & Company.

5547. Borage leaves. Bee-bread leaves.—The leaves of *Borago officinalis* L. (Same family). Native of Europe and cultivated. Presented by H. H. Rusby.

5548. Lippia mexicana.—The leaves of *Lippia dulcis* Trev. (*Verbenaceae*—Verbena Family). Native of Mexicoand the West Indies. Presented by H. H. Rusby.

5549. Another sample of the same from the same donor.

THE MINT FAMILY (*Labiatae*)

5550. Rosemary. Rosmarinus. (See No. 2021.) Presented by H. H. Rusby.

5551. Rosemary leaves.—The leaves of the preceding. Presented by Parke, Davis & Company.

5552. Rosemary leaves with the flowers. Presented by H. H. Rusby.

5553. Sweet-balm leaves.—The leaves of *Cedronella triphylla* Moench. (*Dracocephalum canariense* L.) Native of the Canary Islands. Presented by Merck & Company.

5554. Betony leaves. Betonica.—The leaves of *Betonica officinalis* L. Native of Europe and Asia. Presented by Parke, Davis & Company.

5555. Stone-root leaves. Horsebalm. Richweed.—The leaves of *Collinsonia canadensis* L. Native of eastern and central North America. Collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

5556. Sage leaves. Salvia. (See No. 1589.) Presented by Parke, Davis & Company.

5557. Rubbed sage.—The preceding leaves, modified by a rubbing process. Same donor.

5558. Adulterated powdered sage.—The preceding leaves in the powdered state, adulterated with 50% of corn starch. From the New York drug market. Presented by H. H. Rusby.

5559. Italian baled sage.—The dried leafy stems of the same plant. Presented by Parke, Davis & Company.

5560. Spurious sage.—The leaves of *Saliva triloba* L. Native of southern Europe. From the New York drug market. Presented by H. H. Rusby.

5561. Spurious sage.—The leaves of *S. crassifolia* Desf. Same home and donor.

5562. Spurious sage.—The leaves of *S. lavandulaefolia* Vahl. Same source and donor.

5563.

5564. Melissa. Sweet Melissa. Balm. Lemon balm. (See No. 2007.) Presented by Parke, Davis & Company.

5565. Summer savory. (See No. 1581.) Presented by H. H. Rusby.

5566. Another sample of the same. Same donor.

5567. Hyssop. (See No. 2005.) Presented by Parke, Davis & Company.

5568. Another sample of the preceding, with the flowers. Presented by H. H. Rusby.

5569. Sweet marjoram. Marjoram. Majoriana. (See No. 1579.) Presented by Parke, Davis & Company.

5570. Cretan dittany.—The leaves of *Origanum Dictamnus* L. Native of the Isle of Crete. Presented by the Museum of the British Pharmaceutical Association.

5571. Thyme. Thymus. Garden, or sweet, thyme. (See No. 1585.) Presented by Parke, Davis & Company.

5572. Spearmint. (See No. 1584.) Collected by A. A. Tyler at Easton, Pennsylvania, in 1898.

5573. Peppermint. (See No. 1583.) Presented by H. H. Rusby.
5574. Curled, cross, or crisped-leaved, mint.—The leaves of *Mentha crispa* L. Native of Europe and introduced into the United States. Presented by Merck & Company.
5575. Patchouli leaves. (See No. 2002.) Presented by the New York College of Pharmacy.
5576. A commercial sample of the same, presented by H. H. Rusby.

THE POTATO FAMILY (*Solanaceae*)

5577. Belladonna leaves. Deadly nightshade. (See No. 2850.) Presented by Parke, Davis & Company.
5578. Powdered belladonna leaves.—The preceding in the powdered state. Presented by H. H. Rusby.
5579. The preceding, adulterated with chestnut leaves. Same donor.
5580. Another of the same.
5581. Adulterated belladonna leaves.—The preceding leaves adulterated with Phytolacca, or pokeberry, leaves. From the New York drug market. Presented by H. H. Rusby.
5582. The preceding, in the powdered state. Same donor.
5583. Adulterated belladonna leaves.—The preceding leaves, adulterated with Scopolia leaves. From the New York drug market. Presented by H. H. Rusby.
5584. Duboisia. Ngmoo. Corkwood elm. Presented by the New York College of Pharmacy.
5585. Another sample of the preceding. Presented by Merck & Company.
5586. False Duboisia leaves.—The leaves of *Endiandra Sieberi* Nees (*Lauraceae*—Laurel Family). Native of Australia. Presented by Parke, Davis & Company.
5587. Henbane leaves. Hyoscyamus. (See No. 2864.) Presented by Parke, Davis & Compay.
5588. Cultivated Belgian henbane.—A superior quality of the preceding, produced in Belgium. Presented by H. H. Rusby.
5589. Powdered henbane.—The preceding leaves, in the powdered state. Presented by H. H. Rusby.
5590. The same, but containing an excess of sand. Same donor.
5591. The preceding, adulterated with chestnut leaves. Same donor.
5592. Annual henbane.—The annual form of the preceding species, the entire plants dried. Presented by H. H. Rusby.
5593. Spurious, white, Indian, or Egyptian, henbane. Sakran.—The dried plant of *Hyoscyamus muticus* L. Native of India and northeastern Africa. A dangerous adulterant of, and substitute for, henbane. Presented by H. H. Rusby.
5594. Stramonium leaves. Thorn-apple. Jamestown, or Jimson, weed. (See No. 2861.) Collected by H. H. Rusby at Newark, New Jersey.
5595. Another sample of the same. Presented by Parke, Davis & Company.
5596. Adulterated stramonium leaves.—Stramonium leaves with too large an admixture of stems to be of good quality. Presented by H. H. Rusby.

5597. Adulterated powdered stramonium.—The preceeding, in a ground state and containing some chestnut leaves. Presented by H. H. Rusby.

5598. Purple stramonium.—The leaves of *Datura Tatula* L. Native of South America and naturalized in the United States. Collected by J. A. Shafer at Williamsbridge, New York, August 10, 1904.

5599. Tobacco.—The commercial dried leaves of *Nicotiana Tabacum* L. Native of tropical America and everywhere cultivated. Presented by the American Tobacco Company.

5600. Scopolia leaves.—The leaves of *Scopolia carniolica* Jacq. Native of southeastern Europe and adjacent Asia. Used as a substitute for belladonna leaves, but having different medicinal properties. Presented by H. H. Rusby.

5601. Mullein leaves. Velvet dock. Blanket leaf.—The leaves of *Verbascum Thapsus* L. (*Scrophulariaceae*—Figwort Family). Native of Europe and naturalized in the United States. Collected by J. A. Shafer at Williamsbridge, New York, September 20, 1904.

5602. Matto Ycapao. Urapa. Cocaha.—The leaves of a plant in the same family. Presented by the New York College of Pharmacy.

5603. Digitalis. Foxglove. Folks-glove. (See No. 2875.) The sample consists of leaves of the second year's growth, grown in the New York Botanical Garden, November, 1904.

5604. A commercial sample of the same.—Presented by Parke, Davis & Company.

5605. Pure powdered Digitalis.—The preceding leaves in a powdered state. Presented by H. H. Rusby.

5606. Adulterated powdered Digitalis.—The same as the preceding, but adulterated with chestnut leaves. Same donor.

5607. Another sample of the same, containing an excess of sand. Same donor.

5608. Another sample adulterated with stramonium leaves. Same donor.

5609. Spurious Digitalis.—The leaves of *Digitalis Thapsus* L. Native of Europe. From the New York drug market. Presented by H. H. Rusby.

5610. Another sample of the same. Same donor.

5611. Caroba leaves.—The leaves of a species of *Jacaranda* (*Bignoniaceae*—Bignonia Family). Native of South America. From the New York drug market. Presented by H. H. Rusby.

5612. Bigao. Diabetol.—The leafy and fruiting branches of *Stenolobium molle* Seeman (Same family). Native of tropical America. A commercial sample. Presented by H. H. Rusby.

5613. Another sample, consisting of the leaves only. Same source and donor.

5614. Another sample of the same. Same source and donor.

5615. Benne leaves. Sesame leaves. (See No. 1700.) Presented by Parke, Davis & Company.

5616. Plantain leaves. Plantago.—The leaves of *Plantago Rugelii* Decne. (*Plantaginaceae*—Plantain Family). Native of eastern and central North America. Collected by P. Wilson in Bedford Park, New York, July, 1899.

5617. Black, or narrow-leaved, plantain.—The leaves of *P. lanceolata* L. Native of Europe and freely naturalized in the United States. Collected by W. N. Clute in Bedford Park, New York, July, 1899.

5618. Lobelia. Indian, or wild, tobacco. Bladder-pod. The leaves of *Lobelia inflata* L. Native of eastern and central North America. Collected by H. H. Rusby at Newark, New Jersey, November 27, 1919.

5619. Colt's-foot leaves. Farfara. Tussilago.—The leaves of *Tussilago Farfara* L. (*Cichoriaceae*—Chicory Family). Native of Europe and naturalized in the United States. Presented by the New York College of Pharmacy.

5620. Dandelion leaves. (See No. 3389.) Presented by Merck & Company.

THE THISTLE FAMILY (*Carduaceae*)

5621. White snakeroot leaves. Deerwort. Poolwort.—The leaves of *Eupatorium urticaefolium* L. Native of eastern and central North America. Collected by H. H. Rusby at Montclair Heights, New Jersey, July 5, 1919.

5622. Mexican senna.—The leaves of *Flourensia cernua* DC. Native of Mexico, where it is used as a senna substitute. Collected by H. H. Rusby, in Mexico.

5623. Tarragon. Estragon. (See No. 2047.) Presented by Parke, Davis & Company.

5624. Cut tarragon leaves. The preceding, in a chopped state. From the New York drug market. Presented by H. H. Rusby.

5625. Roman wormwood. Pontica vermuth.—The leaves of *Artemisia pontica* L. Native of Europe and Asia. Presented by the New York College of Pharmacy.

5626. Liabum leaves.—The leaves of *Liabum Bonplandii* Cass. Native of the Andes Mountains, South America. Presented by the New York College of Pharmacy.

5627. Vanilla-leaf. Deer-tongue. (See No. 1604.) Collected by R. M. Harper in Sumpter County, Georgia, September 6, 1900.

5628. Ground vanilla-leaf.—The preceding leaves in a ground state. From the New York drug market. Presented by Merck & Company.

5629. False deer-tongue or vanilla-leaf.—The leaves of *Lacinaria graminifolia* (Walt.) Kuntze. Native of the southeastern United States. Collected by H. H. Rusby at Somerville, South Carolina, March 18, 1909.

Herbs and Plant-bodies

5630. White agaric. Purging agaric. Spunk. Touch-wood. (See No. 2410.) Presented by Parke, Davis & Company.

5631. Another sample of the same. Presented by Merck & Company.

5632. Adulterated powdered white agaric.—The preceding in a powdered state, adulterated with 25% corn starch. Presented by H. H. Rusby.

5633. Surgeon's agaric. Oak agaric. (See No. 147.) Same donor.

5634. Powdered Pachyma.—The powdered plant of a species of *Scutiger* (*Polyporaceae*). A widely distributed species. Specimen from Japan. Presented by H. H. Rusby.

5635. German ergot. Ergot of rye. Spurred rye. (See No. 2403.) Produced in Germany.

5636. Another sample of the same. Presented by E. R. Squibb & Co., of New York City.

5637. Pure powdered German ergot.—The preceding, in the powdered state. Presented by H. H. Rusby.

5638. Spanish ergot.—A superior variety of the above product, produced in Spain and very carefully cleaned and packed to secure perfect preservation. Presented by Parke, Davis & Company.

5639. Another sample, of the crop of 1913. Presented by E. R. Squibb & Company.

5640. Adulterated powdered Spanish ergot.—The preceding, in the powdered state mixed with 5 or 6% of rye starch. Presented by H. H. Rusby.

5641. Swedish ergot, of the crop of 1912. Presented by Squibb & Company.

5642. West Russian ergot, of the crop of 1912. Same donor.

5643. East Russian ergot, of the crop of 1912. Same donor.

5644. Hungarian ergot, of the crop of 1912.

5645. Corsican moss. Worm moss. Helminthochorton.—The dried plant of *Alsidium Helminthochorton* (La Tour.) Kutz. (*Rhodomelaceae*—Rhodomela Family). Native of the Mediterranean region. From the New York drug market. Presented by H. H. Rusby.

5646. Chondrus. Irish moss. Carragheen. (See No. 3308.) Presented by Parke, Davis & Company.

5647. Bladder-wrack. Kelp-ware. Fucus.—The plant, *Fucus vesiculosus* L. (*Fucaceae*—Fucus Family). Native of the North Atlantic and Pacific Oceans. From the New York drug market. Presented by H. H. Rusby.

5648. The same, with other species admixed. From the New York drug market. Presented by H. H. Rusby.

5649. Iceland moss. Cetraria. Reindeer moss. (See No. 2413.) Presented by Parke, Davis & Company.

5650. Lung-moss. Sticta.—The plant, *Sticta pulmonaria* (L.) Ach. Native of the north temperate zone. Presented by Parke, Davis & Company.

5651. Maiden-hair fern.—The herbage of *Adiantum pedatum* L. (*Polypodiaceae*—Polypody Family). Native of northern North America and Asia. Presented by Parke, Davis & Company.

5652. Venus-hair fern.—The herbage of *A. Capillus-Veneris* L. Native of warm countries of the world. Presented by Merck & Company.

5653. Horsetail. Cat's-tail. Bottle-brush.—The plant, *Equisetum arvense* L. (*Equisetaceae*—Horse-tail Family). Native of the north temperate zone. Presented by H. H. Rusby.

5654. Scouring rush.—The plant, *E. hyemale* L. Native of northern Europe and America. Collected by Q. T. Shafer in the New York Botanical Garden, August 10, 1904.

5655. Arbor-vitae.—The leafy twigs of *Thuja occidentalis* L. (See No. 1746.) Collected by J. A. Shafer in the New York Botanical Garden, February 15, 1904.

5656. Red cedar.—The leafy twigs of *Juniperus virginiana* L. (Same family). Native of eastern and central North America. Same locality and collector as last, March, 1904.

5657. Sabina. Savin. (See No. 1751.) Collected by J. A. Shafer at Carnot, Pennsylvania, February, 1904.

5658. A commercial sample of the same. Presented by J. L. Hopkins & Company, of New York City.

5659. Joint fir. Shrubby horsetail. Mountain rush. Mormon, or teamster's, tea.—The branches of *Ephedra trifurca* Torrey. (*Gnetaceae*—Gnetum Family). Native of the southwestern United States and Mexico. Collected by H. H. Rusby in Texas, September, 1905.

5660. An undetermined medicinal grass. Purchased by H. H. Rusby at Oaxaca, Mexico, March, 1910.

5661. Another undetermined medicinal grass. Used in China. From the New York drug market. Presented by H. H. Rusby.

5662. Commelina herb.—The herbage of *Commelina tuberosa* L. (*Commelinaceae*—Commelina Family). From the New York drug market. Presented by H. H. Rusby.

5663. False jaborandi.—The leaves and twigs of *Piper Jaborandi* Vell. (*Piperaceae*—Pepper Family). Native of Brazil. Presented by the New York College of Pharmacy.

5664. Clearweed. Richweed.—The herbage of *Pilea pumila* (L.) A. Gray. (*Urticaceae*—Nettle Family). Native of eastern North America. Collected by J. A. Shafer in the New York Botanical Garden, August 15, 1904.

5665. False wall pellitory.—The herbage of a species of *Parietaria* (Same family) from Argentina. From the New York drug market. Presented by H. H. Rusby.

5666. Stinging nettle. Urtica.—The herbage of *Urtica dioica* L. (Same family). Native of Europe and Asia and naturalized in North America. Collected in the New York Botanical Garden by J. A. Shafer, Aug. 22, 1904.

5667. Another sample of the same. Presented by H. H. Rusby.

5668. American mistletoe. Phoradendron.—The leafy twigs of *Phoradendron flavescens* (Pursh) Nutt. (*Loranthaceae*—Mistletoe Family). Native of the southwestern United States and Mexico. Presented by Parke, Davis & Company.

5669. False Virginia snakeroot.—The herbage of *Hexastylis virginica* (L.) Small (*Aristolochiaceae*—Snakeroot Family). Native of the southeastern United States. Collected by H. H. Rusby at Mount Airy, North Carolina, June 19, 1919.

5670. Knotweed. Doorweed. Doorgrass.—The herbage of *Polygonum aviculare* L. (*Polygonaceae*—Knotweed Family). Native of the north temperate zone. From the New York drug market. Presented by H. H. Rusby.

5671. Smartweed. Water pepper.—The herbage of *Persicaria Hydropiper* (L.) Opiz. Native of Europe and naturalized in North America. Collected by H. H. Rusby at Marlboro, New Hampshire, August 30, 1919.

5672. Jerusalem oak. Feather geranium.—The herbage of *Chenopodium Botrys* L. (*Chenopodiaceae*—Goosefoot Family). Native of Europe and Asia and widely naturalized. Collected by J. A. Shafer at Williamsbridge, New York, August 24, 1904.

5673. Mexican tea. American wormseed.—The herbage of *C. ambrosioides* L. Native of tropical America and naturalized in the United States. Collected by J. A. Shafer at Williamsbridge, New York, August, 1904.

5674. Another sample of the same, collected by P. Wilson in the New York Botanical Garden, July, 1919.

5675. Yerba del Sorilla.—The herbage of *C. graveolens* Willd. Native of tropical America. Collected at Santa Eulalia, in 1919, by M. de Lautreppe.

5676. Rupturewort. Herniaria.—The herbage of *Herniaria alpina* L. (*Caryophyllaceae*—Pink Family). Native of Europe. From the New York drug market. Presented by H. H. Rusby.

THE BUTTERCUP FAMILY (*Ranunculaceae*)

5677. Pulsatilla. Pasque flower. (See No. 2514). Native of Europe. Presented by Parke, Davis & Company.

5678. Another sample of the same, presented by H. H. Rusby.

5679. Adonis. Pheasant's-eye. False hellebore. (See No. 2524). Presented by Merck & Company.

5680. Another sample of the same, presented by the New York College of Pharmacy.

5681. Aconite herb. Monkshood. (See No. 2532). Presented by Merck & Company.

5682. Another sample of the same, presented by Parke, Davis & Company.

5683. Coptis herb. Goldthread.—The plant, *Coptis trifolia* (L.) Salisb. Native of northern North America. Presented by Parke, Davis & Company.

5684. Virgin's bower. Nigger's wool. Love vine.—The herbage of *Clematis virginiana* L. Native of eastern and central North America. Collected by H. H. Rusby at Marlboro, New Hampshire, July 24, 1919.

5685. Fumitory. Earth smoke. Wax dolls.—The herbage of *Fumaria officinalis* L. (*Fumariaceae*—Fumitory Family). Native of Europe and cultivated for ornament, and naturalized in the United States. Presented by Merck & Company.

5686. Chelidonium. Garden celandine.—The herbage of *Chelidonium majus* L. (Same family). Native of Europe and naturalized in the United States. Presented by the New York College of Pharmacy.

5687. Scurvy grass. Cochlearia. Spoonwort. (See No. 1855). From the New York drug market. Presented by H. H. Rusby.

5688. Shepherd's purse.—The herbage of *Bursa Bursa-pastoris* (L.) Britton (Same family). Native of Europe and Asia and widely naturalized in the United States. Collected by P. Wilson in Bedford Park, June 20, 1899.

5689. Pepper grass.—The herbage of *Lepidium virginicum* L. (Same family). Native of North America. Collected by A. A. Tyler at Easton, Pennsylvania.

5690. Hedge mustard. Bank cress.—The herbage of *Erysimum officinale* L. (Same family). Native of Europe and naturalized in the United States. Collected by Williams and Wilson in the New York Botanical Garden, July 19, 1919.

5691. Sundew. Drosera.—The dried plant of *Drosera rotundifolia* L. (*Droseraceae*—Sundew Family). Native of the north temperate zone. Collected by A. A. Tyler at Easton, Pennsylvania, August 21, 1898.

5692. Another sample of the same, from the New York drug market. Presented by H. H. Rusby.

5693. Another sample, consisting of *D. intermedia* Hayne. Native of the Atlantic coast region of the United States. Collected by W. N. Clute in New Jersey, in 1899.

5694. Virginia, or ditch, stonecrop.—The herbage of *Penthorum sedoides* L. (*Penthoraceae*—Virginia Stonecrop Family). Native of eastern North America. Collected by W. N. Clute in the New York Botanical Garden, July, 1899.

5695. Agrimony. Agrimonia.—The herbage of *Agrimonia Eupatoria* L. (*Rosaceae*—Rose Family.) Native of Europe and a weed in the United States. Presented by Parke, Davis & Company.

5696. Five finger. Cinque-foil.—The herbage of *Potentilla canadensis* L. (Same family). Native of eastern and central North America. Collected by J. A. Shafer in the New York Botanical Garden, August 18, 1904.

THE PEA FAMILY (*Fabaceae*)

5697. Yellow melilot, or sweet clover. (See No. 1445). A commercial sample.

5698. A sample of the same collected by H. H. Rusby near Poughkeepsie, New York, July 27, 1919.

5699. White melilot, or sweet clover. (See No. 1446). Same source as the preceding.

5700. Another sample of the same, collected by P. Wilson in Bedford Park, New York, June 21, 1899.

5701. Broom. Scoparius. (See No. 2657). Presented by Parke, Davis & Company.

5702. Another sample, from the same donor.

5703. Goat's-rue. Catgut. Devil's shoestrings.—The herbage of *Cracca virginiana* L. Native of the eastern United States. Collected by R. M. Harper in Sumpter County, Georgia, August 31, 1900.

5704. Platylobium.—The herbage of *Platylobium formosum* J. E. Sm. Native of Australia. Presented by Parke, Davis & Company.

5705. Woundwort. Kidney vetch. Anthyllis.—The herbage of *Anthyllis tetraphylla* L. (?). Presented by H. H. Rusby.

5706. European goat's-rue.—The herbage of *Galega officinalis* L. Native of Europe. From the New York drug market. Presented by H. H. Rusby.

5707. Another sample from the same donor.

5708. Coronilla.—The herbage of *Coronilla scorpioides* (Medic.) Koch. Native of Europe. Presented by Merck & Company.

5709. Tall yellow wood-sorrel.—The herbage of *Xanthoxalis cymosa* Small. Native of eastern North America. Collected by A. A. Tyler at Easton, Pennsylvania, August 22, 1898.

5710. Spotted jewel-weed or touch-me-not. Wild, or brook, celandine.—The herbage of *Impatiens biflora* Walt. (*Balsaminaceae*—Balsam Family). Native of eastern and central North America. Collected by J. A. Shafer at Williamsbridge, New York, August 20, 1904.

5711. Another sample of the same. Collected by H. H. Rusby at Marlboro, New Hampshire, August 30, 1919.

5712. Nasturtium. Tropaeolum.—The herbage of *Tropaeolum majus* L. (*Tropaeolaceae*—Nasturtium Family). Native of the Peruvian Andes and cultivated for ornament. Grown by H. H. Rusby at Newark, New Jersey.

5713. Creosote bush.—The leafy twigs of *Covillea tridentata* (DC.) Vail. (*Zygophyllaceae*—Zygophyllum Family). Native of southwestern North America. Presented by the New York College of Pharmacy.

5714. Another sample of the preceding, collected by D. T. MacDougal at Langtry, Texas, June, 1904.

5715. Bitter milkwort. Herba Polygalae.—The herbage of *Polygala amara* L. (*Polygalaceae*—Milkwort Family). Native of Europe. Presented by Merck & Company.

THE SPURGE FAMILY (*Euphorbiaceae*)

5716. Spotted spurge.—The herbage of *Chamaesyce maculata* (L.) Small. Native of North America. Collected by Q. T. Shafer in the New York Botanical Garden, August 3, 1904.

5717. Yerba del baca. Euphorbia pilulifera. Australian asthma weed.—The herbage of *C. pilulifera* (L.) Small. Native of tropical America. Presented by H. H. Rusby.

5718. Another sample of the same, presented by Parke, Davis & Company.

5719. Spurious Euphorbia pilulifera.—The herbage of an undetermined species of *Euphorbia*, offered as the preceding. From the New York drug market. Presented by H. H. Rusby.

5720. Tall spotted spurge.—The herbage of *C. Preslii* (Guss.) Arthur. Collected by J. A. Shafer in the New York Botanical Garden, September 10, 1904.

5721. Three-seeded mercury.—The herbage of *Acalypha virginica* L. Native of eastern and central North America. Collected by J. A. Shafer in the New York Botanical Garden, August, 1904.

5722. Golondrina.—The herbage of *Chamaesyce prostrata* (Ait.) Small. Native of tropical America. From the New York drug market. Presented by H. H. Rusby.

5723. Milokisch. Jew's mallow. Inte.—The herbage of *Corchorus olitorius* L. (See No. 645). From the New York drug market. Presented by H. H. Rusby.

5724. St. John's-wort.—The herbage of *Hypericum perforatum* L. (*Hypericaceae*—St. John's-wort Family). Native of Europe and Asia, and a weed in the United States. A commercial sample, presented by Parke, Davis & Company.

5725. Another sample of the same, collected by H. H. Rusby near Poughkeepsie, New York, June 27, 1919.

5726. Cut St. John's-wort. The preceding in a finely divided state. From the New York drug market. Presented by H. H. Rusby.

5727. Yerba reuma.—The herbage of *Frankenia grandifolia* Ch. & Sch. (*Frankeniaceae*—Frankenia Family). Native of the California seacoast. Presented by the New York College of Pharmacy.

5728. Rock rose. Frost-weed.—The herbage of *Helianthemum canadense* (L.) Britton (*Cistaceae*—Rock-rose Family). Native of eastern North America. Collected by J. A. Shafer at Belleville, New Jersey, September 25, 1904.

5729. Pansy herb. Heart's -ease. The herbage of *Viola tricolor* L. (*Violaceae*—Violet Family). Native of northern Europe and Asia and cultivated for ornament. From the New York drug market. Presented by H. H. Rusby.

5730. Another sample of the same. From the New York drug market. Presented by H. H. Rusby.

5731. Passion flower. (See No. 3842). Presented by Peek & Velsor.

5732. Anhalonium. Pellote. Mescal buttons. (See No. 2747). Presented by Merck & Company, of New York City.

5733. Tall evening primrose. (See No. 3277).—*Onagra biennis* (L.) Scop. (*Onagraceae*—Evening Primrose Family). Native of Europe and a widely distributed weed in North America. Collected by Q. T. Shafer in the New York Botanical Garden, July 20, 1904.

5734. American marsh pennywort or pennypost.—The herbage of *Hydrocotyle americana* L. (*Ammiaceae*—Carrot Family). Native of eastern and central North America. Collected by A. A. Tyler at Easton, Pennsylvania, August 15, 1898.

5735. Spotted wintergreen or pipsissewa.—The leafy stems of *Chimaphila maculata* (L.) Pursh (*Pyrolaceae*—Pyrola Family).

5736. Wintergreen. Checkerberry. (See No. 1990). Collected by J. A. Shafer at Carnot, Pennsylvania, March 25, 1904.

5737. Moneywort. Creeping Charlie, Jennie, or Loosestrife.—The herbage of *Lysimachia Nummularia* L. (*Primulaceae*—Primrose Family). Native of Europe and naturalized in the United States. Collected by H. H. Rusby, near Schenectady, New York, June 27, 1919.

5738. Cut centaury herb. Lesser centaury.—The herbage of *Centaurium Centaurium* (L.) W. F. Wight. (*Gentianaceae*—Gentian Family), in a cut state. Native of Europe and sparingly naturalized in the United States. Presented by Parke, Davis & Company.

5739. Canchalagua. California centaury.—The herbage of *C. venusta* (A. Gray) Robinson. Native of California. From the New York College of Pharmacy.

5740. Chirata. Chiretta.—The plant of *Swertia Chirayita* (Roxb.) Lyons (Same family). Native of India. Presented by Parke, Davis & Company.

5741. Another sample of the same. Same donor.

5742. False chirata or chiretta.—The herbage of *S. angustifolia* (Buch.) Ham. Native of northern Asia. Presented by the British Pharmaceutical Association.

5743. To-yuk.—The herbage of *Pleurogynia rotata* (L.) Griseb. (Same family). Native of northern Asia and North America. From the New York College of Pharmacy.

5744. American centaury. Bitter clover. Bitter bloom. Rose pink.—The herbage of *Sabbatia angularis* (L.) Pursh (Same family). Native of the eastern United States. Presented by Parke, Davis & Company.

5745. Canadian hemp.—The herbage of *Apocynum cannabinum* L. (See No. 2816). Collected by A. A. Tyler at Easton, Pennsylvania, August 8, 1898.

5746. Banderilla roja.—The herbage of *Loeselia coccinea* G. Don (*Polemoniaceae*—Phlox Family). Native of Mexico. Purchased in the Mexican drug market by H. H. Rusby.

5747. Borage.—The herbage of *Borago officinalis* L. (*Boraginaceae*—Borage Family). Native of Europe and cultivated as a drug. Presented by Parke, Davis & Company.

5748. Lagundi dangla.—The leafy twigs of *Vitex Negundo* L. (*Verbenaceae*—Verbena Family). Native of eastern Asia. From the Philippine Islands. Presented by E. B. Southwick.

5749. Blue vervain or Verbena.—The herbage of *Verbena hastata* L. (Same family). Native of eastern and central North America. Collected by J. A. Shafer at Williamsbridge, New York, July 10, 1904.

5750. White vervain or Verbena.—The herbage of *V. urticifolia* L. Same region and collection data.

THE MINT FAMILY (*Labiatae*)

5751. Blue tarweed.—The herbage of *Trichostema lanceolatum* Benth. Native of the Pacific coastal region. From the New York College of Pharmacy.

5752. Skullcap. Scutellaria. Hoodwort.—The herbage of *Scutellaria lateriflora* L. Native of North America. Collected in the New York Botanical Garden by J. A. Shafer, September 16, 1904.

5753. A commercial sample of the same. Presented by Parke, Davis & Company.

5754. Spurious skullcap. Southern skullcap.—The herbage of *S. serrata* Andr. Native of the eastern United States. A commercial sample, offered in the New York drug market, as genuine skullcap. Presented by H. H. Rusby.

5755. Another sample of the same, from the same donor.

5756. Horehound.—The herbage of *Marrubium vulgare* L. Native of Europe and Asia, and naturalized throughout America. Cultivated as a drug. Presented by Parke, Davis & Company.

5757.

5758. A peculiar woolly form of No. 5756. From the New York drug market. Presented by H. H. Rusby.

5759. Adulterated horehound. The preceding drug, adulterated with the herbage of *M. peregrinum* L. Native of southeastern Europe and adjacent Asia. From the New York drug market. Presented by H. H. Rusby.

5760. Spurious horehound.—The herbage of the preceding adulterant. Same source and donor.

5761. Spurious horehound.—The herbage of *M. supinum* L. (?). Same home and source. Presented by Parke, Davis & Company.

5761.1. Another spurious horehound. From the New York drug market, presented by H. H. Rusby.

5762. Black horehound.—The herbage of *Ballota nigra* L. Native of Europe and sparingly naturalized in the United States. Offered in the New York drug market as horehound. Presented by H. H. Rusby.

5763. Greek tea.—The herbage of *Sideritis theezans* Boiss. & Helde. Native of southeastern Europe and adjacent Asia. From the New York drug market. Presented by H. H. Rusby.

5764. Sideritis herb.—The herbage of a European species of *Sideritis*. From the New York drug market. Presented by H. H. Rusby.

5765. Catnip. Catmint. Cataria.—The herbage of *Nepeta Cataria* L. Native of Europe and Asia and naturalized in the United States. Collected by R. Ringe in Bedford Park, New York, June 21, 1899.

5766. Ground ivy. Glechoma. Field balm.—The herbage of *Glechoma hederacea* L. Native of Europe and widely naturalized in the United States. Same collection data as for the preceding.

5767. A commercial sample of the same. Presented by H. H. Rusby.

5768. Heal-all. Self-heal. Prunella.—The herbage of *Prunella vulgaris* L. Native of the north temperate zone. Collected by J. A. Shafer at Williamsbridge, New York, August 10, 1904.

5769. Yellow hemp-nettle. Herba galeopsidis.—The herbage of *Galeopsis ochroleuca* Lam. Native of Europe. Presented by Merck & Company.

5770. Motherwort. Lion's-tail.—The herbage of *Leonurus Cardiaca* L. Native of Europe and Asia and widely naturalized in North America. Collected by J. A. Shafer at Williamsbridge, New York, September 20, 1904.

5771. Cut motherwort.—A commercial sample of the preceding, finely cut. Presented by H. H. Rusby.

5772. Betony. Wood betony. Bishop's-wort.—The herbage of *Betonica officinalis* L. Native of Europe. A commercial sample, presented by H. H. Rusby.

5773. Clary-herb. Clear-eye. Sclarea.—The herbage of *Salvia Sclarea* L. (See No. 2025). Presented by H. H. Rusby.

5774. Italian baled sage.—The leafy stems of *Salvia officinalis* L. (See No. 1589.)

5775. Three-leaved sage.—The herbage of *S. triloba* L. Native of Europe and Asia. Offered in the New York market as sage. Presented by H. H. Rusby.

5776. Wild bergamot. Oswego tea.—The herbage of *Monarda fistulosa* L. Native of eastern North America. Collected by J. A. Shafer in the New York Botanical Garden, August 22, 1904.

5777. Another sample of the same. Collected by A. A. Tyler at Easton, Pennsylvania, August 16, 1898.

5778. Cut horsemint. American origanum.—The chopped plant of *M. punctata* L. Native of eastern and central North America. A commercial sample, presented by H. H. Rusby.

5779. Another sample, more finely cut. Same donor.

5780. Oswego tea. American bee-balm.—The herbage of *M. didyma* L. Native of eastern North America. Collected by J. A. Shafer in the New York Botanical Garden, September 2, 1904.

5781. American pennyroyal. (See 2034). Collected by A. A. Tyler at Easton, Pennsylvania, August 24, 1898.

5782. A commercial sample of the same. Presented by H. H. Rusby.

5783. Slender mountain mint.—The herbage of *Koellia flexuosa* (Walt.) MacM. Native of eastern North America. Collected by H. H. Rusby at Montclair Heights, New Jersey, July 3, 1919.

5784. Virginia mountain mint, or thyme. Mountain thyme.—The herbage of *K. virginica* (L.) Britton. Native of eastern and central North America. Collected by A. A. Tyler at Easton, Pennsylvania, August 26, 1898.

5785. Melissa. Balm. Sweet, lemon, or garden, balm.—The herbage of *Melissa officinalis* L. (See No. 2007). A commercial sample, presented by H. H. Rusby.

5786. Yerba buena.—The herbage of *Micromeria Chamissonis* (Benth.) Greene. Native of the Pacific coast region of the United States. From the New York College of Pharmacy.

5787. Hyssop.—The herbage of *Hyssopus officinalis* L. (See No. 2005). Collected by J. A. Shafer in the New York Botanical Garden, September 15, 1904.

5788. Cut hyssop,—The preceding, chopped into small pieces. A commercial sample, presented by H. H. Rusby.

5789. Marjoram. Sweet marjoram. Majorana. (See No. 1579). Presented by Peek & Velsor.

5790. Wild, pot, or winter, marjoram. Origanum.—The herbage of *Origanum vulgare* L. Native of Europe and naturalized in the United States. Collected by R. Ringe in Bedford Park, New York, June 21, 1899.

5791. Spurious thyme.—The herbage of *O. cinereum* Noé. Native of the Mediterranean region. Offered as thyme in the New York market. Presented by H. H. Rusby.

5792. Another spurious thyme.—Probably the herbage of *O. Onites* L. Same home, source, and donor.

5793. Another sample of the same. Presented by H. H. Rusby.

5794. Cretan dittany. Spanish hops.—The herbage of *O. creticum* L. Native of southern Europe. Presented by H. H. Rusby.

5795. Wild thyme. Serpyllum.—The herbage of *Thymus Serpyllum* L. Presented by Lehn & Fink.

5796. Another sample of the preceding. Imported into the New York market from China. Presented by H. H. Rusby.

5797. American, or mountain, dittany. Stone-mint. Sweet horse-mint.—The herbage of *Cunila origanoides* (L.) Britton. Native of the eastern United States. Collected by J. A. Shafer at Eagle Rock, New Jersey, September 25, 1904.

5798. American bugle-weed or bitter bugle. Cut-leaved water horehound.—The herbage of *Lycopus americanus* Muhl. Native of North America. Collected by J. A. Shafer at Williamsbridge, New York, August 5, 1905.

5799. Purple bugle-weed. Sweet bugle-weed. American water horehound.—The herbage of *L. virginicus* L. Native of eastern and central North America. Collected by J. A. Shafer in the New York Botanical Garden, July 30, 1904.

5800. Peppermint. Collected by R. Ringe in Bronx Park, June 20, 1899.

5801. Spearmint. (See No. 1584). Presented by J. L. Hopkins & Company, of New York City.

5802. Pennyroyal. European pennyroyal (See No. 2032). Collected by J. A. Shafer in the New York Botanical Garden, September 15, 1904.

5803. Sweet basil. (See No. 2041). Presented by J. L. Hopkins & Company.

5804. Pichi, with wood. Fabiana.—The leafy twigs of *Fabiana imbricata* R. & P., adulterated with the wood. (*Solanaceae*—Potato Family.) Native of Chile. A commercial sample presented by H. H. Rusby.

5805. Another sample, presented by Merck & Company.

5806. Bittersweet. Dulcamara.—The leafy twigs of *Solanum Dulcamara* L. (Same family). Native of the north temperate zone. Collected by R. Ringe in Bedford Park, New York, June 30, 1899.

THE FIGWORT FAMILY (*Scrophulariaceae*)

5807. Balmony. Turtle-head. Snake-head.—The herbage of *Chelone glabra* L. Native of eastern and central North America. Collected by J. A. Shafer in the New York Botanical Garden, September 12, 1904.

5808. Another sample of the same. Collected by H. H. Rusby at Brookdale, New Jersey, September 27, 1919.

5809. Common speedwell. Veronica.—The herbage of *Veronica officinalis* L. Native of the north temperate zone. Collected by H. H. Rusby at Lake George, New York, June 26, 1919.

5810. A commercial sample of the preceding. Presented by Parke, Davis & Company.

5811. Narrow-leaved cow-wheat.—The herbage of *Melampyrum lineare* Lam. Native of North America. Collected by P. Wilson in Bronx Park, New York, August, 1899.

5812. Carpenter's square. American, or Maryland, figwort.—The herbage of *Scrophularia marylandica* L. Native of eastern and central North America. Collected by J. A. Shafer in the New York Botanical Garden, August 29, 1904.

5813. Toad-flax. Butter-and-eggs.—The herbage of *Linaria Linaria* (L.) Karst. (See No. 716). Collected by J. A. Shafer in the New York Botanical Garden, July 11, 1904.

5814. Downy false foxglove.—The herbage of *Aureolaria flava* (L.) Farwell. Native of the eastern United States. Collected by A. A. Tyler at Easton, Pennsylvania, July 30, 1898.

5815. Eyebright. Eyewort. Euphrasy.—The herbage of *Euphrasia officinalis* L. Native of Europe. A commercial sample. Presented by H. H. Rusby.

5816. Beech-drops. Cancer-drops. Cancer-root.—The plant of *Leptamnium virginianum* (L.) Raf. (*Orobanchaceae*—Broom-rape Family). Native of eastern North America. Collected by J. A. Shafer at Arlington, New Jersey, September 24, 1904.

5817. Cancer-root. Earth-club. Squaw-root.—The plant of *Conopholis americana* (L.) Wallr. (Same family). Native of the eastern United States. Collected by H. E. Stevens at Gainesville, Florida, March, 1919.

5818. Woodruff. Waldmeister. Sweet-grass.—The herbage of *Asperula odorata* L. (*Rubiaceae*—Madder Family). Native of Europe and introduced into the United States. A commercial sample, presented by H. H. Rusby.

5819. Cleavers or cleaverwort. Goose-grass. Bed-straw.—The herbage of *Galium Aparine* L. (Same family). Native of Europe and widely naturalized in North America. Collected by H. H. Rusby at Marlboro, New Hampshire, August, 1919.

5820. Partridge berry. Twin-berry. Snakeberry. Squaw-vine. Winter cloves. —The herbage of *Mitchella repens* L. (Same family). Native of North America and Japan. Collected by A. A. Tyler at Easton, Pennsylvania, August 5, 1898.

5821. Lobelia. Indian tobacco.—The herbage of *Lobelia inflata* L. (See No. 2918). Collected by P. Wilson in New York City, August, 1899.

5822. Pure powdered Lobelia.—The preceding in the powdered state. Presented by H. H. Rusby.

5823. Great Lobelia. Blue cardinal flower.—The herbage of *Lobelia syphilitica* L. Native of eastern and central North America. Collected by R. Ringe in New York City, September, 1899.

5824. Dandelion herb. (See No. 5098). Collected by Q. T. Shafer at Williamsbridge, New York, August 8, 1904.

5825. Wild lettuce.—The herbage of *Lactuca canadensis* L. (Same family). Native of eastern and central North America. Collected by A. A. Tyler, at Easton, Pennsylvania, July 29, 1898.

THE THISTLE FAMILY (*Carduaceae*)

5826. Marsh elder. High-water shrub. Jesuits' bark.—The herbage of *Iva frutescens* L. Native of the Atlantic coast region of the United States. Collected by W. N. Clute at Pelham Bay, New York, July, 1899.

5827. Great ragweed.—The herbage of *Ambrosia trifida* L. Native of eastern and central North America. Collected by A. A. Tyler at Easton, Pennsylvania, August 19, 1898.

5828. Common ragweed.—The herbage of *A. artemisiaefolia* L. Native of North America. Same data as preceding.

5829. Gaertneria.—The herbage of a species of *Gaertneria.* Data wanting.

5830. Ironweed.—The herbage of *Vernonia noveboracensis* (L.) Willd. Native of the eastern United States. Collected by H. H. Rusby at Little Falls, New Jersey, September 27, 1919.

5831. Boneset. Thoroughwort.—The herbage of *Eupatorium perfoliatum* L. Native of eastern and central North America. Collected by P. Wilson in Bronx Park, New York, August 28, 1899.

5832. Purple boneset. Joe-Pye-weed.—The herbage of *E. maculatum* L. Collected by A. A. Tyler at Easton, Pennsylvania, August 8, 1898.

5833. Grindelia. California gum-weed.—The herbage of *Grindelia robusta* Nutt. (?) Native of the western United States. Presented by Parke, Davis & Company.

5834. Sweet, or fragrant, goldenrod.—The herbage of *Solidago odora* Ait. Native of eastern North America. Collected by W. N. Clute in the New Jersey pine barrens, July 7, 1899.

5835. Baylahuen.—The herbage of *Aplopappus Baylahuen* Remy. Native of Chile. A commercial sample. Presented by H. H. Rusby.

5836. Canada fleabane. Horsetail. Pride-weed. (See No. 2058). Collected by J. A. Shafer in the New York Botanical Garden, August 25, 1904.

5837. Daisy fleabane.—The herbage of *Erigeron ramosus* (Walt.) B. S. P. Native of eastern and central North America. Collected at Montclair Heights, New Jersey, July 3, 1919.

5838. Sweet fleabane. Sweet scabious.—The herbage of *E. annuus* (L.) Pers. Native of North America. Collected by H. H. Rusby at Newark, New Jersey, June 26, 1919.

5839. Plantain-leaved everlasting. Mouse-ear. White plantain. Low cudweed. Ladies' tobacco.—The herbage of *Antennaria plantaginifolia* (L.) Richards. Native of eastern North America. Collected by A. A. Tyler at Easton, Pennsylvania, August, 1898.

5840. White, or sweet, balsam. Life everlasting. Old field balsam.—The herbage of *Gnaphalium obtusifolium* L. Native of eastern and central North America. Collected by J. A. Shafer in Bronx Park, New York, August, 1908.

5841. Pearly everlasting. Everlasting marguerite.—The herbage of *Anaphalis margaritacea* (L.) Benth. & Hook. Native of northern Asia and North America. Collected by A. A. Tyler at Easton, Pennsylvania, August, 1898.

5842. Thimble-weed. Tall cone-flower.—The herbage of *Rudbeckia laciniata* L. Native of eastern and central North America. Collected by J. A. Shafer in the New York Botanical Garden, August 24, 1904.

5843. Feverfew. Wild chamomile.—The herbage of *Matricaria Parthenium* L. Native of Europe and cultivated for ornament. Presented by Parke, Davis & Company.

5844. Tansy. Tanacetum (See No. 2062). Presented by J. L. Hopkins & Company.

5845. A sample of the same. Collected by Q. T. Shafer at Williamsbridge, New York, August 12, 1904.

5846. Spanish needles. Beggar ticks.—The herbage of *Bidens bipinnata* L. Native of America, and naturalized in the Old World. Collected by J. A. Shafer in Bronx Park, New York, August 18, 1904.

5847. Calendula. Marigold. (See No. 1318). Grown by H. H. Rusby at Newark, New Jersey, September, 1919.

5848. Tagetes herb.—The herbage of *Tagetes florida* Sweet. Native of Mexico. Obtained in Mexico by H. H. Rusby.

5849. Daisy herb. Ox-eye, or common, daisy.—The herbage of *Leucanthemum Leucanthemum* (L.) Rydb. Native of Europe and Asia, and a very common and abundant weed in the United States. Collected by H. H. Rusby at Newark, New Jersey.

5850. May-weed. Dog, or fetid, chamomile. Horse daisy.—The herbage of *Maruta Cotula* (L.) DC. Native of Europe and Asia and naturalized in the United States and most temperate regions. Collected by J. A. Shafer at Williamsbridge, New York, August 8, 1904.

5851. Yarrow. Milfoil. Achillea.—The herbage of *Achillea Millefolium*. (See No. 2060). Collected by J. A. Shafer at Williamsbridge, New York, July 10, 1904.

5852. Another sample of the same. Presented by Merck & Company.

5853. Mugwort. Muggert. Mugweed.—The herbage of *Artemisia vulgaris* L. Native of the Old World and naturalized in the United States. Presented by Parke, Davis & Company.

5854. Wormwood. Absinthium. Large vermuth. (See No. 2928). Collected by J. A. Shafer in the New York Botanical Garden, September 10, 1904.

5855. Another sample of the same. Presented by H. H. Rusby.

5856. A commercial sample of the same, presented by Parke, Davis & Company.

5857. Swedish wormwood. The same species, produced in Sweden. From the New York drug market. Presented by H. H. Rusby.

5858. Smaller absinthe. Pontica absinthe. Roman wormwood.—The herbage of *A. Pontica* (L.) Native of southeastern Europe and Asia. Presented by H. H. Rusby.

5859. Another sample of the same. Presented by J. L. Hopkins & Company.

5860. White vermuth.—The herbage of *A. herba-alba* L. Native of southern Europe and Asia. From the New York drug market. Presented by H. H. Rusby.

5861. Mountain sage.—The herbage of *A. frigida* Willd. Native of southern Europe and Asia. From the New York drug market. Presented by H. H. Rusby.

5862. Southernwood. Abrotanum.—The herbage of *A. Abrotanum* L. Native of southern Europe and adjacent Asia, and adventitious in the United States. A commercial sample, presented by H. H. Rusby.

5863. Fireweed. Pilewort.—The herbage of *Erichtites hieracifolia* (L.) Raf. Native of America. Collected by J. A. Shafer in the New York Botanical Garden, August 30, 1904.

5864. Squaw-weed. Life-root. Golden ragwort.—The herbage of *Senecio aureus* L. Native of eastern and central North America. A commercial sample. Presented by H. H. Rusby.

5865. Tansy ragwort. Staggerwort. Ban-weed.—The herbage of *S. Jacobaea* L. Native of Europe and occasional in the United States. A commercial sample, presented by H. H. Rusby.

5866. Blessed thistle. Our Lady's, or bitter, thistle.—The herbage of *Cnicus benedictus* L. Native of southern Europe and naturalized in the United States. Presented by Parke, Davis & Company.

5867 Another sample of the same, in the cut condition. Presented by H. H. Rusby.

5868. Another sample from the same source.

Inflorescences and Flowers

5869. Corn silk. Stigmata Maidis.—The styles and stigmas of *Zea Mays* L. (See No. 257). Collected by J. A. Shafer at Carnot, Pennsylvania, August 29, 1906.

5870. Calamus buds.—The inflorescences of *Acorus Calamus* L. (*Araceae*—Arum Family). Native of the north temperate zone. Collected by W. N. Clute in Bronx Park, New York City, in 1899.

5871. Saffron. Spanish saffron. (See No. 1270). Presented by H. H. Rusby.

5872. Spurious saffron.—The florets of *Calendula officinalis* L. (*Carduaceae*—Thistle Family), rolled, dyed and weighted to imitate the genuine. Presented by H. H. Rusby.

5873. Convallariae flores. Lily-of-the-Valley flowers. (See No. 1779.) Presented by the New York College of Pharmacy.

5874. Poplar buds. Balm-of-Gilead buds.—The unexpanded winter buds of *Populus candicans* Ait., collected in the spring. (*Salicaceae*—Willow Family). Native of northern North America. Presented by H. H. Rusby.

5875. Another sample of the same. Presented by Parke, Davis & Company.

5876. Black willow buds.—The buds of *Salix nigra* Marsh. (Same family). Native of North America. Presented by Parke, Davis & Company.

5877. Cannabis. Indian hemp. Guaza.—The flowering tops of the pistillate plants of *Cannabis sativa* L. (*Moraceae*—Mulberry Family). Native of India and cultivated. Presented by Parke, Davis & Company.

5878. Pure powdered Cannabis.—The preceding drug, in the powdered state. Presented by H. H. Rusby.

5879. Adulterated powdered Cannabis.—The preceding, adulterated with about 30% of starch. From the New York drug market. Presented by H. H. Rusby.

5880. Another sample of *Cannabis sativa*, produced in Siam.

5881. African guaza or hemp.—The same product, grown in Africa. Presented by H. H. Rusby.

5882. Guaza, or hemp, siftings.—The finer portions of the preceding, sifted out and containing fine impurities. Presented by H. H. Rusby.

5883. Peony flowers.—The petals of *Paeonia officinalis* L. (See No. 1277). From the New York drug market. Presented by H. H. Rusby.

5884. Flores Cassiae. Cassia buds.—The flower-buds of *Cinnamomum Cassia* Blume. (See No. 1505). Presented by Merck & Company.

5885. Red rose petals. Rosa Gallica.—The petals of *Rosa gallica* L. (*Rosaceae*—Rose Family). Native of Europe and cultivated for ornament and perfumery. A commercial sample. Presented by H. H. Rusby.

5886. White rose petals. Cabbage, or Provence, rose.—The petals of *Rosa centifolia* L. Native of Asia and everywhere cultivated for ornament and perfumery. Presented by Merck & Company.

5887. A sample of the same, impure because the calyx is attached. From the New York market. Presented by H. H. Rusby.

5888. Cousso, or Koussoo, flowers. Brayera.—The pistillate flowers of *Hagenia abyssinica* (Bruce) Gmelin (Same family). Native of northeastern Africa. Presented by Parke, Davis & Company.

5889. Meadow queen. Meadow-sweet. Bride-sweet. Bridewort.—The flowers of *Ulmaria Ulmaria* (L.) Barnh. (Same family). Native of Europe and western Asia and cultivated for ornament. Presented by Merck & Company.

5890. Peach flowers.—The flowers of *Amygdalus persica* L. (*Drupaceae*—Plum Family). Native of Persia and everywhere cultivated. From the New York College of Pharmacy.

5891. Red clover blossoms.—The inflorescence of *Trifolium pratense* L. (*Fabaceae*—Pea Family). Native of Europe and almost everywhere cultivated for fodder, and naturalized. Collected by Q. T. Shafer at Williamsbridge, New York, August 12, 1904.

5892. Genista flowers.—The flowers of *Spartium junceum* L. (Same family). Native of Europe and Asia and cultivated. Presented by H. H. Rusby.

5893. Sweet orange flowers. (See No. 3732). Presented by the New York College of Pharmacy.

5894. Another sample of the same. From Paraguay, through the Field Museum of Natural History.

5895. American linden, or lime, flowers.—The flowers of *Tilia americana* L. (*Tiliaceae*—Linden Family). Native of eastern and central North America. Presented by Peek & Velsor.

5896. Another sample of the same, impure because of the presence of the stems and bracts. Presented by Parke, Davis & Company.

5897. European linden, or lime, flowers.—The flowers of *T. cordata* Mill. (?) Native of Europe. Presented by H. H. Rusby.

5898. Another sample of the same. Presented by Merck & Company.

5899. European linden, or lime, flowers.—The flowers of *T. europaea* L. Native of Europe and much cultivated as a shade tree. Presented by H. H. Rusby.

5900. Blue Mallow, or Malva, flowers with calyx. (See No. 1300). Presented by Parke, Davis & Company.

5901. Althaea, or marshmallow, flowers with calyx.—The flowers of *Althaea officinalis* L. (See No. 4990). Presented by Parke, Davis & Company.

5902. Hollyhock flowers with calyx.—The flowers of *A. rosea* (L.) Cav. Native of the Levant and cultivated for ornament. Presented by the New York College of Pharmacy.

5903. The same, without the calyx. Same donor.

5904. Pansy flowers.—The flowers of *Viola tricolor* L. (*Violaceae*—Violet Family). Native of northern Europe and Asia and cultivated for ornament. Presented by the New York College of Pharmacy.

5905. Blue violet flowers. Sweet, or English, violet. (See No. 1308). Presented by the New York College of Pharmacy.

5906. Cloves. Caryophyllus. (See No. 1561). Presented by the New York College of Pharmacy.

5907. Pure powdered cloves.—The preceding in the powdered state. Presented by H. H. Rusby.

5908. Adulterated powdered cloves.—The preceding, admixed with 50% of the peduncles. Same donor.

5909. Another sample of the preceding, being nearly all peduncles. Same donor.

5910. Powdered cloves consisting almost wholly of mother-of-cloves, or the fruit of the same plant. Same donor.

5911. Primrose, or cowslip, flowers.—The flowers of *Primula vulgaris* Jacq. (*Primulaceae*—Primrose Family). Native of Europe and cultivated for ornament. Presented by H. H. Rusby.

5912. Centaury flowers. (See No. 5738). Presented by H. H. Rusby.

5913. Borage flowers. (See No. 5547). Presented by Parke, Davis & Company.

5914. Another sample of the same. Presented by H. H. Rusby.

5915. Lavender flowers. (See No. 2009). Presented by Peek & Velsor.

5916. White Datura flowers.—The flowers of *Datura fastuosa* L. (*Solanaceae*—Potato Family). Native of India. Presented by H. H. Rusby.

5917. Mullein flowers.—The flowers of *Verbascum Thapsus* L. (*Scrophulariaceae*—Figwort Family). Native of Europe and Asia and a common weed in the United States. Presented by H. H. Rusby.

5918. Mullein flowers.—The flowers of *Verbascum phlomoides* L. Native of Europe. Presented by Merck & Company.

5919. Black elder flowers. Elderberry flowers.—The flowers of *Sambucus nigra* L. (*Caprifoliaceae*—Honeysuckle Family). Native of the Mediterranean region and adjacent Europe, Asia, and Africa. Presented by Merck & Company.

5920. American black elderberry flowers. (See No. 2344). Presented by H. H. Rusby.

5921. The same, in the fresh state. Collected in the York New Botanical Garden, 1919.

THE THISTLE FAMILY (*Carduaceae*)

5922. Tansy, or Tanacetum, flowers.—The inflorescence of *Tanacetum vulgare* L. (See No. 2062). Collected by Q. T. Shafer at Williamsbridge, New York, August 12, 1904.

5923. Safflower. American saffron. (See No. 1320). Presented by Parke, Davis and Company.

5924. Santonica. Levant wormseed. (See No. 2931). Presented by Merck & Company.

5925. Another sample of the same, presented by Parke, Davis & Company.

5926. Powdered Santonica, or Levant, wormseed.—The preceding in the powdered state. Presented by H. H. Rusby.

5927. Spurious Santonica, or Levant, wormseed.—The unexpanded flower-heads of a species of *Artemisia* closely related to the last. From the New York drug market. Presented by H. H. Rusby.

5928. Another sample of the same. Same donor.

5929. White daisy flowers. Collected by Q. T. Shafer at Williamsbridge, New York, August 10, 1904.

5930. Chilca.—The flower-heads of *Baccharis calliprinos* Griseb. Native of tropical America. From Paraguay, through the Field Museum of Natural History.

5931. Marigold flowers. Calendula. (See No. 1318). Presented by Parke, Davis & Company.

5932. Arnica flowers. Leopard's-bane.—The flower-heads of *Arnica montana* L. (See No. 2943). Presented by Parke, Davis & Company.

5933. Spurious Arnica flowers.—The flower-heads of *Inula britannica* L. Offered in the New York market as genuine Arnica flowers. Presented by H. H. Rusby.

5934. Another sample of the same. Presented by the British Pharmaceutical Association.

5935. Dalmatian insect flowers.—The flower-heads of *Chrysanthemum cinerariaefolium* Trev. Native of southwestern Asia and cultivated. Presented by Merck & Company.

5936. Spurious insect powder.—The preceding, in the powdered state, but consisting chiefly of the stems, which are not active. Presented by H. H. Rusby.

5937. Yarrow flowers. Flores Achilleae.—The flower-heads of *Achillea Millefolium* L. (See No. 2060). Presented by Merck & Company.

5938. Another sample of the same.

5939. Roman, or English, chamomile. Anthemis. (See No. 2052). Presented by Merck & Company.

5940. Another sample of the same. Presented by Parke, Davis & Company.

5941. German chamomile. Matricaria.—The flower-heads of *Chamomilla Chamomilla* (L.) Rydb. Native of Europe and cultivated. Presented by Parke, Davis & Company.

5942. A sample of the same, adulterated with the stems. Presented by H. H. Rusby.

5943. Ginipiglia flowers. Straw flowers. Winter flowers.—The flower-heads of a species of *Helichrysum*. Native of Europe and cultivated. Presented H. H. Rusby.

5944. Mbui Ibati.—The flower-heads of an undetermined plant. From Paraguay, through the Field Museum of Natural History.

5945. Scale-flowers. Mutisia.—The flower-heads of *Mutisia viciaefolia* Cav. Native of the South American Andes. Collected by H. H. Rusby near La Paz, Bolivia, 1885.

Fruits

5946. Juniper berries. Juniperus. (See No. 1757). Presented by Lehn & Fink, of New York City.

5947. Phoenician juniper berries.—The fruits of *J. phoenicea* L. Native of the Mediterranean region. From the Paris Exposition of 1900.

5948. Job's tears.—The fruits of *Coix Lachryma-Jobi* L. (*Gramineae*—Grass Family). Native of eastern Asia and the East Indies, and cultivated. Collected by J. A. Shafer in Montserrat, West Indies, January, 1907.

5949. Saw palmetto berries.—The fruits of *Serenoa serrulata* (R. & S.) Hook. f. (See No. 391). Presented by C. W. Hensden, of New York City.

5950. Cohoon palm fruit.—The fruit of *Attalea Cohune* Mart. (Same family). Native of tropical America.

5951. Coco de Aceite.—The seeds of *Elaeis melanococca* Gaertn. (?) (Same family). Native of Mexico and cultivated. Acquired by H. H. Rusby in the market of Zamora, Mexico, February, 1919.

5952. Caraguata fruit.—The fruit of *Caraguata Berteroniana* Schult. f. (*Bromeliaceae*—Pineapple Family). Grown in Paraguay.

5953. Malabar cardamom. (See No. 1407). Presented by Parke, Davis & Company.

5954. Pure powdered cardamom. The preceding, in the powdered state. Presented by H. H. Rusby.

5955. Crude cardamom.—A poor grade of the preceding fruit. Same donor.

5956. An inferior grade of the same.

5957. Yara cardamom.—Probably the fruit of a species of *Elettaria*. From Parke, Davis & Company.

5958. Cardonilla. Matico fruit. Said to be the fruit of *Piper angustifolium* R. & P. (*Piperaceae*—Pepper Family). Native of the South American Andes. From the Field Museum of Natural History.

5959. Commercial black pepper. Piper nigrum. (See No. 1448).

5960. Aleppo pepper.—A superior variety of the preceding.

5961. Lampong pepper.—Another variety of the same.

5962. Acheen pepper.—An ordinary grade of the same.

5963. Native white pepper.—Produced by rubbing off the pulp from the stone of the same fruit, in the ripe state.

5964. Long pepper.—The fruit of *Chavica officinarum* Miq. (Same family). Native of the East Indies and cultivated. Presented by Lehn & Fink.

5965. Cubeb. Cubeba. Cubeb pepper. (See No. 1795). The sample contains some of the stalks. Presented by Parke, Davis & Company.

5966. Cordate-leaved alder fruit. Tag alder.—The fruit of *Alnus cordifolia* Tenore. (*Betulaceae*—Birch Family). Native of Europe and Asia. From the Paris Exposition of 1900.

5967. Hops. Humulus. Lupulus. (See No. 1810). Presented by Parke, Davis & Company.

5968. The same drug, of second grade.
5969. American wormseed. Chenopodium. (See No. 1822). Presented by Parke, Davis & Company.
5970. Pokeberries. Red-ink berries. Pigeon berries.—The fruit of *Phytolacca americana* L. (See No. 1276). Presented by Parke, Davis & Company.
5971. A sample of the same collected by Q. T. Shafer in Bronx Park, New York October 30, 1904.
5972. Fish berries. Cocculus Indica. (See No. 2544).
5973. Star anise. Chinese, or sweet, star anise. (See No. 1827). Presented by Parke, Davis & Company.
5974. Japanese, or poisonous, star anise.—The fruit of *Illicium anisatum* L. Native of Japan and cultivated for ornament. Presented by the New York College of Pharmacy.
5975. Laurel berries. Fructus Lauri.—The fruit of *Laurus nobilis* L. (See No. 1512). Presented by Parke, Davis & Company.
5976. Poppy capsules. Papaveris Capsulae.—The fruit of *Papaver somniferum* L. (*Papaveraceae*—Poppy Family), from which the seeds have been removed. Native of the Orient and cultivated for opium. Presented by Parke, Davis & Company.
5977. Another sample of the same. Presented by the British Pharmaceutical Association.
5978. Simulo.—The fruit of a species of *Capparis* or *Crataeva*. (*Capparidaceae*—Caper Family). Presented by H. H. Rusby.
5979. Rose hips. Rose berries. Sweet-briar fruits.—The fruit of *Rosa canina* L. (*Rosaceae*—Rose Family), from which the achenes have been removed. Native of Europe. Presented by Lehn & Fink.

THE SENNA FAMILY (*Caesalpiniaceae*)

5980. Nandabay.—The pods of *Caesalpinia melanocarpa* Griseb. (See No. 1372). From Paraguay, through the Field Museum of Natural History.
5981. Tamarind pods.—The ripe fruits of *Tamarindus indica* L. Native of India and cultivated in tropical countries. Collected by M. A. Howe at Nassau, Bahamas, March, 1905.
5982. West Indian preserved tamarind.—The preserved pulp of the preceding fruit, as prepared in the West Indies. Acquired by Mrs. N. L. Britton at Nassau, December, 1904.
5983. A commercial sample of the same. Presented by Lehn & Fink.
5984. East Indian preserved tamarind.—The same product as prepared in the East Indies. Presented by Lehn & Fink.
5985. Spurious senna pods.—The fruits of *Cassia obovata* Collad., removed in the purification of Alexandria senna. Native of northeastern Africa. Presented by E. U. Andrus & Company, of New York City.
5986. Senna branches, bearing pods.
5987. India senna pods.—The fruits of *Cassia angustifolia* Vahl. (See No. 5427). Presented by Parke, Davis & Company.
5988. Cassia fistula. Purging Cassia.—The fruits of *Cathartocarpus fistula* (L.) Pers. Native of India and cultivated. Presented by Parke, Davis & Company.

THE PEA FAMILY (*Fabaceae*)

5989. Balsam-of-Peru pods.—The fruits of the balsam-of-Peru tree. (See No. 1871). Presented by H. H. Rusby.

5990. Another sample of the same, the wing not removed.

5991. Balsam-of-Tolu pods.—The fruits of the balsam-of-Tolu tree. (See No. 1869). Presented by H. H. Rusby.

5992. Another sample of the same.

THE RUE FAMILY (*Rutaceae*)

5993. Northern prickly ash berries. Xanthoxyli fructus.—The fruits of *Zanthoxylum americanum* Mill. Native of eastern and central North America. Presented by Parke, Davis & Company.

5994. Orange berries. Aurantia immatura. Neroli petit grain. (See No. 1556). Presented by the New York College of Pharmacy.

5995. Bitter orange peel. The outer rind of the preceding fruit in a mature state. Presented by Lehn & Fink.

5996. Bitter orange peel quarters.—The entire rind of the same fruit, removed in quarters before fully ripe and dried. Presented by Parke, Davis & Company.

5997. Lima santo.—The rind of a Citrus fruit produced in Paraguay. From the Field Museum Natural History.

5998. Naranja hay.—The sliced and dried fruit of the sweet orange. (See No. 1896). From Paraguay, through the Field Museum of Natural History.

5999. Sweet orange peel.—The outer rind of the preceding fruit. Presented by Parke, Davis & Company.

6000. Bell fruit. Indian bell. Bengal quince. Golden apple.—The half-ripe fruit of *Aegle Marmelos* (L.) Correa, cut and dried. Native of India and cultivated. Presented by Parke, Davis & Company.

6001. Bombay colocynth.—The fruit of *Balanites Roxburghii* Planch. (*Simarubaceae*—Quassia Family). Native of the East Indies. Presented by the New York College of Pharmacy.

6002. Jamaica Quassia fruits.—The fruits of *Picrasma excelsa* (Sw.) Planch. (See No. 2701). Collected by N. L. Britton along the roadside, St. Ann's Bay, Jamaica, March 27, 1909.

6003. Harra seeds, or fruits.—The fruits of *Melia Azedarach* L. (*Meliaceae*—Mahogany Family). Native of India and cultivated. From the New York College of Pharmacy.

THE SUMAC FAMILY (*Anacardiaceae*)

6004. Mastic fruit.—The fruits of *Pistacia Lentiscus* L. (See No. 1252). From the Paris Exposition of 1900.

6005. Oriental cashew. Marking-nut. Malacca bean.—The dried unripe fruit of *Semecarpus Anacardium* L. Native of the East Indies and cultivated.

6006. Another sample of the same, more nearly mature.

6007. American cashew nut.—The fruit of *Anacardium occidentale* L. (See No. 2713). Presented by the New York College of Pharmacy.

6008. Quebrachia fruits.—The fruits of *Quebrachia Lorentzii* Griseb. Native of southeastern South America.

6009. European sumac fruit.—The fruit of *Rhus coriaria* L. Native of Europe. From the Paris Exposition of 1900.

6010. American sumac. Smooth sumac. Rhus glabra.—The fruits of *R. glabra* L. (See No. 1373). Collected by J. A. Shafer in the New York Botanical Garden, March 25, 1904.

6011. Urushi seed, or fruit.—The fruits of *Toxicodendron vernicifera* DC. Native of Japan.

6012. Buckthorn berries.—The fruits of *Rhamnus Frangula* L. (?) (*Rhamnaceae*—Buckthorn Family). Native of Europe. Presented by H. H. Rusby.

6013. Buckthorn berries.—The fruits of *R. cathartica* L. Native of Europe and naturalized in the United States. Presented by Parke, Davis & Company.

6014. Long Myrobalans. Ink-nuts. Hare-nuts.—The fruits of *Buceras Chebula* (Ritz) Lyons. (*Combretaceae*—Combretum Family). Native of the East Indies. Presented by the New York College of Pharmacy.

6015. Guavira mi.—The fruits of an undetermined species of the *Myrtaceae*, or myrtle family. From Paraguay, through the Field Museum of Natural History.

6016. Allspice. Pimenta.—The fruit of *Pimenta Pimenta* (L.) Cockerell (Same family). Native of tropical America and extensively cultivated. Presented by Lehn & Fink.

6017. Mother of cloves. Clove fruit.—The fruit of *Carophyllus aromatica*. (See No. 1561). Presented by Lehn & Fink.

6018. Ivy berries.—The fruits of *Hedera Helix* L. (*Araliaceae*—Ivy Family). Native of Europe and cultivated for ornament. Presented by H. H. Rusby.

THE CARROT FAMILY (*Ammiaceae*)

6019. Cummin. Cumin. (See No. 2761). Presented by H. H. Rusby.

6020. Conium. Poison hemlock.—The fruit of *Conium maculatum* L. (See No. 2764). Presented by Parke, Davis & Company.

6021. Pure powdered Conium.—The preceding fruit in the powdered state.

6022. Adulterated powdered Conium.—The same, adulterated with anise.

6023. Adulterated powdered Conium.—The same, adulterated with about 20% of starch.

6024. Spurious powdered Conium.—A wholly spurious substitute for the preceding drug.

6025. Wild carrot fruit, or "seed." Carota.—The fruit of the wild plant of *Daucus Carota* L. Native of Europe and universally cultivated for food and distributed as a weed. Collected by Q. T. Shafer in the New York Botanical Garden, September, 1906.

6026. Angelica fruit, or "seed."—The fruit of *Angelica Archangelica* L. (See No. 1973). Presented by Parke, Davis & Company.

6026.1. Another sample of the same. Presented by H. H. Rusby.

6027. Parsley fruit, or "seed." (See No. 1578). Presented by Parke, Davis & Company.
6028. Another sample of the same. Presented by the New York College of Pharmacy.
6029. Celery fruit, or "seed." (See No. 1577). Presented by Parke, Davis & Company.
6030. Caraway. Carum. (See No. 1576). Presented by Parke, Davis & Company.
6031. Ajowan. Bishop's-weed. Weed-seed.—The fruit of *Ptychotis Coptica* (L.) Lyons. Native of India. Presented by Parke, Davis & Company.
6032. Coriander. Coriandrum. (See No. 1570). Presented by Parke, Davis & Company.
6033. Dill. Anethum. (See No. 1980). Presented by Parke, Davis & Company.
6034. Another sample of the same. Presented by H. H. Rusby.
6035. Fennel fruit, or "seed." Foeniculum. (See No. 1954). Presented by Parke, Davis & Company.
6036. Roman fennel.—A fine cultivated variety of the same. Same donor.
6037. Anise fruit, or "seed." (See No. 1573). Presented by Parke, Davis & Company.
6038. Maltese anise.—The preceding, produced at Malta.
6039. Pure powdered anise.—Anise in the powdered state. Presented by H. H. Rusby.
6040. Powdered partly exhausted anise.—Anise from which the valuable oil has been partly distilled, in the powdered state. Presented by H. H. Rusby.
6041. Adulterated powdered anise.—Anise in the powdered state, adulterated with about 20% of starch. Same donor.
6042. Another sample of the same with about 50% of starch. Same donor.

6043. Embelia.—The fruit of *Embelia Ribes* Burm. (*Myrsinaceae*—Myrsine Family). Native of India. Presented by Merck & Company.
6044. Maklua fruit.—The fruit of *Diospyros ehretioides* Wall. (*Ebenaceae*—Ebony Family). Native of tropical Asia. From Siam, through the Paris Exposition of 1900.
6045. Persimmon.—The unripe fruit of *D. virginiana* L. Native of the southeastern United States. Collected in the New York Botanical Garden, September, 1920.
6045.1. Another sample of the same, very young. Collected by H. H. Rusby at Sea Girt, New Jersey, August, 1920.
6046. Abraham's balm fruit.—The fruit of *Vitex Agnus-castus* L. (*Verbenaceae*—Verbena Family). Native of the Mediterranean region. From the Paris Exposition of 1900.

THE POTATO FAMILY (*Solanaceae*)

6047. Cayenne, red, bird, or African, pepper. (See No. 1594). Collected by H. H. Rusby from cultivated plants at Davie, Florida, in February.
6048. Mombassa Capsicum or chillies.—A commercial sample of the same, of superior quality, grown in eastern Africa. Presented by Gravenhorst & Company, of New York City.
6049. Japanese Capsicum or chillies.—A variety of the same species, cultivated in Japan. Presented by Lehn & Fink.

6050. Nepaul Capsicum.—A very pungent variety of the same species. Presented by Durkee & Company, of New York.
6051. Sonora chillies.—The fruit of another variety of the same, grown in Mexico. Purchased by H. H. Rusby at Nueva Laredo, Mexico, June, 1910.
6052. Italian paprika. Dried red garden peppers.—The fruit of *Capsicum annuum* L. Same home and distribution as the preceding. Imported from Italy. Presented by Stormer & Aipa, of New York City.
6053. Horse-nettle, or bull-nettle. Apple of Sodom.—The berries of *Solanum carolinense* L. Native of eastern North America.

6054. Narrow-leaved calabash, or gourd.—The fruit of *Crescentia linearifolia* Miers. (*Bignoniaceae*—Trumpet-creeper Family). Native of tropical America and cultivated. Collected by Britton and Shafer at San Juan, Porto Rico, February 10, 1913.
6055. Dried black elderberries. The fruit of *Sambucus canadensis* L. (See No. 2344). Collected by Q. T. Shafer at Williamsbridge, New York, August, 1904.
6056. Turkish, or Trieste, colocynth.—The peeled dried fruit of *Citrullus colocynthus* Schrader (*Cucurbitaceae*—Gourd Family). Native of the Mediterranean region. Produced in Turkey. Presented by Parke, Davis & Company.
6057. Turkish, or Trieste, colocynth pulp.—The preceding, deprived of its seeds. Presented by H. H. Rusby.
6058. Spanish colocynth.—The preceding fruit produced in Spain, and peeled before being dried. Presented by Parke, Davis & Company.
6059. Spanish colocynth pulp.—The preceding, deprived of its seeds.
6060. Pure powdered colocynth pulp.—The same pulp in the powdered state. Presented by H. H. Rusby.
6061. The same, ground with its seeds. Same donor.
6062. A sample of the same, nearly all seeds. Same donor.
6063. Wild lettuce fruits, or "seeds."—The fruits of *Lactuca virosa* L. (?) (*Cichoriaceae*—Chicory Family). Native of Europe. Presented by the New York College of Pharmacy.

THE THISTLE FAMILY (*Carduaceae*)

6064. Burdock fruit, or "seeds."—The fruit of various species of *Arctium*. Native of Europe and now a cosmopolitan weed. Presented by Parke, Davis & Company.
6065. Sunflower fruits, or "seeds." (See No. 1702). Presented by H. H. Rusby.
6066. Lavender cotton.—The fruits of *Santolina chamaecyparissus* L. Native of the Mediterranean region. From the Paris Exposition of 1900.
6067. Holy, or milk, thistle fruits, or "seeds." Cardui fructus. Fructus Mariae. —The fruits of *Mariana Mariana* (L.) Hill. Native of the Mediterranean region and occasional in the United States. Presented by the New York College of Pharmacy.

Seeds

6068. Areca nuts. Betel nuts. (See No. 440). Presented by Parke, Davis & Company.
6069. The same, dried without the removal of the pericarp, or husk. Collected by Samuel Henshaw in Jamaica, in 1901.
6070. Asparagus seed.—The seeds of *Asparagus officinalis* L. (See No. 2448). Presented by H. H. Rusby.
6071. Sabadilla. Cevadilla.—The seeds of *Asagraea officinalis* (Ch. & Sch.) Lindl. (See No. 2461). Presented by Parke, Davis & Company.
6072. Colchicum seed.—The seeds of *Colchicum autumnale* L. (See No. 2456) Presented by Parke, Davis & Company.
6073. Pure powdered Colchicum seed.—The preceding seeds in the powdered state. Presented by H. H. Rusby.
6074. Cardamom seed.—The seed of *Elettaria repens* (Sonn.) Baill. (See No. 1407.) Presented by Parke, Davis & Company.
6075. Grains of Paradise.—The seeds of *Amomum Granum-paradisi* Afz. (Same family). Native of the East Indies and cultivated. Presented by Lehn & Fink.
6076. Singapore nutmegs. (See No. 1476). Nutmegs imported from Singapore Presented by E. R. Durkee & Company.
6077. Nutmeg shells.—The testa removed from the above kernels. Same donor.
6078. Padang mace. (See No. 1482). Same donor.
6079. Minado mace.—Another variety of the same. Same donor.
6080. Penang mace.—Another commercial variety of the same. Same donor.
6081. Banda mace.—Still another variety. Same donor.
6082. Stavesacre. Staphisagria. Lousewort.—The seeds of *Delphinium staphisagria* L. (See No. 2517). Presented by Parke, Davis & Company.
6083. Larkspur seed. Delphinium.—The seeds of *D. Consolida* L. and *D. Ajacis* L.
6084. Black caraway.—The seed of *Nigella sativa* L. (Same family). Native of the Mediterranean region and cultivated. Presented by Lehn & Fink.
6085. Indian aconite seeds.—The seeds of *Aconitum ferox spicata.* (Same family). Native of India. Presented by the Reporter on Economic Products for British India.
6086. Blue poppy seed, or maw seed. (See No. 1517). Presented by Lanman & Kemp, of New York City.
6087. Another sample of the same.
6088. Black, or brown, mustard. (See No. 1519). Presented by Lehn & Fink.
6089. Another sample of the same, of peculiar appearance and color. Presented by the New York College of Pharmacy.
6090. The same, adulterated with charlock seed.
6091. Chilean black mustard.—The same, grown in Chile. Presented by H. H. Rusby.
6092. Another sample of the same, from Tongoi, Chile.
6093. White, or yellow, mustard. (See No. 1522). Presented by Lehn & Fink.
6094. Another sample of the same, the seeds of large size. Presented by Merck & Company.
6095. Chinese cabbage, or "mustard," seed.—The seeds of *Brassica chinensis* L. Native of China and cultivated. Offered in the New York market as white mustard. Presented by H. H. Rusby.

6096. Rape seed.—The seed of *B. Napus* L. Native of Europe and cultivated for turnips and other foods. Presented by H. H. Rusby.
6097. Another sample of the preceding. Presented by Lehn & Fink.
6098. African quince seed. (See No. 3612). Presented by H. H. Rusby.
6099. German quince seed.—The same seed, produced in Germany. Presented by Lehn & Fink.
6100. Adulterated quince seed.—The same, adulterated with the central portion of the pericarp. Presented by H. H. Rusby.
6101. Sweet almonds. (See No. 1639). Presented by Lehn & Fink.
6102. Bitter almonds (See No. 1532). Same donor.
6103. Prunella pits, or seeds.—The seeds of *Prunus spinosa* L. (Same family). Native of Europe and Asia, and cultivated. Presented by H. H. Rusby.
6104. The stones of *P. brigantiaca* Vill. Native of western Europe. From Italy.
6105. Leucaena seeds.—The seeds of *Leucaena glauca* (L.) Benth. (*Mimosaceae*—Mimosa Family). Native of tropical America.
6106. Bijuga seeds.—The seeds of *Copaiba bijuga* (Willd.) Kuntze (*Caesalpiniaceae*—Senna Family). Native of tropical America. Presented by the New York College of Pharmacy.
6107. Gray nicker seeds. Gray Bonduc nuts.—The seeds of *Guilandina Crista* (L.) Small (Same family). Native of tropical coast regions. Collected by J. A. Shafer in Montserrat, West Indies, February, 1907.

THE PEA FAMILY (*Fabaceae*)

6108. Calabar bean. Ordeal bean. Chopnut.—The seeds of *Physostigma venenosum* Balfour. Native of western tropical Africa. Presented by Parke, Davis & Company.
6109. Another sample of the same, from Liberia, where it is called "Samneo."
6110. Dyers' greenweed, broom furze, or base-broom, seeds.—The seeds of *Genista tinctoria* L. Native of Europe and cultivated for ornament. Presented by the New York College of Pharmacy.
6111. Banshee seeds.—The seeds of an undetermined species, apparently in this family. Presented by the New York College of Pharmacy.
6112. Ormosia seeds. Large coral-beans. Necklace tree seeds.—The seeds of *Ormosia dasycarpa* Jacks. Native of tropical regions. Presented by Merck & Company.
6113. Bladder senna seeds.—The seeds of *Colutea arborescens* L. Native of southern Europe. From the Paris Exposition of 1900.
6113.1. Brain-nut.—The seed, in its fruit, of *Andira excelsa* H. B. K. Native of Central America. Presented by the United States National Museum, May, 1920.
6114. Prayer-beads. Love-peas. Chicken-eyes. Abrus.—The seeds of *Abrus Abrus* (L.) W. F. Wight. Native of tropical regions. Collected by J. A. Shafer in Montserrat, West Indies, January, 1907.
6115. Para Tonka, or Tonquin, beans. Dipteryx.—The specially cured seeds of *Coumarouna odorata* Aubl. Native of the Amazon Valley. Presented by Parke, Davis & Company.
6116. Fenugreek. Foenum-Graecum (See No. 2671). Presented by Parke, Davis & Company.

6116.1. Cercis seed.—The seed *Cercis Siliquastrum* L. Native of southern Europe and Asia.

6117. Flax seed. Linseed (See No. 602). From the Pan-American Exposition of 1901.

6118. Cedron seeds. Simaba seeds.—The seeds of *Simaba Cedron* (R. Br.) Planch. (*Simarubaceae*—Quassia Family). Native of tropical America. Presented by the New York College of Pharmacy.

6119. Croton, or Croton oil, seeds, in the pod.—The seeds of *Croton Eluteria* (L.) Bennett (See No. 1663). From northern Metello, Ceylon, through the Field Museum of Natural History.

6120. A commercial sample of the same. Presented by J. L. Hopkins & Company.

6120. 1. Another sample, grown in Ceylon.

6121. Castor, or castor-oil, seeds. Higuerilla (See No. 1656). Specimen from Guatemala.

6122. Another sample from the Amatitian Department, same country.

6123. Another sample of the same from Ovalle, Chile.

6124. Another sample of the same, from Paraguay, through the Field Museum of Natural History.

6125. A commercial sample of the same, from the New York market. Presented by H. H. Rusby.

6126. Curcas seeds. Purging-nuts. Barbadoes nuts (See No. 1665). Presented by Lehn & Fink.

6127. Another sample of the preceding. Presented by the New York College of Pharmacy.

6128. Katbilawa. Chirinja.—The seeds of *Buchanania latifolia* Roxb. (*Anacardiaceae*—Sumac Family). Native of Burma.

6129. European spindle, or staff, tree. Burning bush.—The seeds of *Euonymus europaea* L. (*Celastraceae*—Staff-tree Family). Native of Europe and cultivated for ornament. From the Paris Exposition of 1900.

6130. Guarana (See No. 2210). Presented by Merck & Company.

6131. Pure powdered guarana.—The preceding, in the powdered state. Presented by H. H. Rusby.

6132. Abelmoschus seed. Amber-seed. Ambrette.—The seeds of *Hibiscus Abelmoschus* L. (*Malvaceae*—Mallow Family). Native of tropical Asia and Africa and cultivated. Presented by the New York College of Pharmacy.

6133. Cacao. Chocolate beans, or seeds (See No. 1686). Obtained by J. A. Shafer in Cuba, in 1901.

6134. Pataste.—The seeds of *Theobroma bicolor* H. & B. Native of tropical America. From Mazatanagua, Guatemala.

6135. Cola. Cola-nuts. Bichy-nuts.—The seeds of *Cola vera* Schum. (Same family). Native of tropical Africa, and cultivated in tropical countries. Presented by Lehn & Fink.

6136. Another sample of the same. Presented by Parke, Davis & Company.

6137. Another Cola.—The cotyledons of *C. acuminata* (Beauv.) Schott. Same source.

6138. Annatto seed. Arnotta seed. Orellana (See No. 1303). Acquired by L. M. Underwood in Porto Rico, in 1901.

6139. Jambul seed. Rose-apple seeds.—The seeds of *Eugenia Jambolana* Lam. (*Myrtaceae*—Myrtle Family.) Native of the East Indies and cultivated. Presented by H. H. Rusby.

6140. Ignatia seeds. St. Ignatius beans.—The seeds of *Strychnos Ignatii* Lindl. (*Loganiaceae*—Nux-vomica Family). Native of the Philippine Islands. Presented by Parke, Davis & Company.

6141. Nux vomica. Dog buttons (See No. 2795). Grown in Siam.

6142. Another sample of the same. Presented by Parke, Davis & Company.

6143. Pure powdered nux vomica.—The preceding seed in the powdered state. Presented by H. H. Rusby.

6144. Holarrhena seeds.—The seeds of *Holarrhena antidysenterica* Wall. Native of tropical Asia. Presented by the New York College of Pharmacy.

6145. Fawn-green Strophanthus seeds in the pod.—The seeds of *Strophanthus Kombe* Oliver (*Apocynaceae*—Dog-bane Family), in the pod. Native of tropical Africa. Presented by Parke, Davis & Company.

6146. Another sample of the same. Presented by C. F. Chandler.

6147. A commercial sample of the same, cleaned and deprived of their awns. Presented by the New York College of Pharmacy.

6148. Brown Strophanthus seed.—The seeds of *S. hispidus* DC., deprived of their awns. Same home as preceding. Same donor.

6149. Stramonium seed. Thorn-apple. Jamestown weed.—The seed of *Datura Stramonium* L. (See No. 2861). Collected by J. A. Shafer at Carnot, Pennsylvania, November, 1902.

6150. Pure powdered Stramonium seed.—The preceding seeds in the powdered state. Presented by H. H. Rusby.

6151. Henbane seed.—The seed of *Hyoscyamus niger* L. (See No. 2864). Presented by Lehn & Fink.

6152. White benne seed. Sesamum seed (See No. 1700). Acquired by L. M. Underwood in Porto Rico, in 1901.

6153. Another sample, grown in Guatemala.

6154. Another specimen of the same, grown in Korea.

6155. Black benne, or teel, seed.—A black-seeded variety of the same. Presented by Boustead & Company, of Singapore.

6156. Another sample of the same. Grown in Korea.

6157. Ispaghul seed. Flea-seed.—The seed of *Plantago Ispagula* Roxb. (*Plantaginaceae*—Plantain Family). A cultivated plant of India.

6158. Coffee (See No. 2213). Specimens grown in Bolivia, and obtained by H. H. Rusby in 1885.

6159. Lobelia, or Indian tobacco, seed.—The seed of *Lobelia inflata* L. (See No. 2918). Presented by the New York College of Pharmacy.

6160. Lobelia seed.—The seed of a species of *Lobelia*.

6161. Salted pumpkin seed.—The seed of a variety of *Pepo Pepo* (L.) (See No. 4051). Acquired by H. H. Rusby in the streets of Mexico City, where it was sold as a food. It is also medicinal.

Miscellaneous Drugs

PLANT PARTS

6162. *Lycopodium.* Vegetable sulphur. The spores of *Lycopodium clavatum* L. (*Lycopodiaceae*—Club-moss Family), or of other species of *Lycopodium.* Native of the north temperate zone. Presented by H. H. Rusby.

6163. A sample of the same, adulterated with about 3% of starch. Same donor.

6164. Another sample, containing a large amount of starch. Same donor.

6165. Another sample, adulterated with pine pollen. Same donor.

6166. Cibotium. Penghawar Djambi.—The scales and chaffy hairs from the base of the stipes of *Cibotium Djambianum* Hassk. (*Polypodiaceae*—Polypody Family). Native of the East Indies. Presented by Merck & Company.

6167. Chinese or Japanese galls (See No. 1378). Presented by H. H. Rusby.

6168. Another sample of the same. Presented by Merck & Company.

6169. Mexican galls. Produced on an undetermined plant of Mexico. Acquired by H. H. Rusby in the state of Morelos, Mexico, 1910.

6170. Cowage, or cowhage.—The hairs from the fruit of *Mucuna pruriens* (L.) DC. (*Fabaceae*—Pea Family). Native of tropical regions. Collected by A. A. and E. G. Heller, in Porto Rico, in 1899.

6171. Another sample of the same. Presented by the New York College of Pharmacy.

6172. Kamala. Rottlera.—The glands and hairs removed from the fruit of *Mallotus philippinensis* (Lam.) Muell. Arg. (*Euphorbiaceae*—Spurge Family). Native of the East Indies. Presented by the New York College of Pharmacy.

6173. Another sample of the preceding. Donated by H. H. Rusby.

6174. Another sample, adulterated with sand. Same donor.

6175. Another sample, similarly adulterated. Same donor.

6176. Another sample, adulterated with both sand and fiber. Same donor.

6177. Spurious kamala.—A substance or mixture prepared artificially to resemble and be fraudulently sold for kamala. Same donor.

RESINS

6178. Common rosin. Colophony. Resina.—The residue remaining after distilling the oil from turpentine. Presented by Seabury & Johnson.

6179. Burgundy pitch. Pix burgundica.—The prepared oleo-resin exuding from the bark of *Abies Abies* (L.) Rusby (*Pinaceae*—Pine Family). Native of Europe. Same donor.

6180. Dammara. Dammar. Resina Dammar.—A resinous exudation from *Agathis loranthifolia* Salisb. (Same family). Native of the East Indies. Same donor.

6181. Kowrie. Kauri. Kowrie copal.—A fossil resin produced by *Agathis australis* (Lamb.) Steud. Native of New Zealand. Donated by the New York College of Pharmacy.

6182. Sandarac. Resina Sandaraca.—The resin exuding from the bark of *Callitris articulata* (Vahl.) Farwell (Same family). Native of northwestern Africa. Presented by Parke, Davis & Company.

6183. Black-boy gum. Xanthorrhoea resin.—The resinous exudation of *Xanthorrhoea arborea* R. Br. (*Liliaceae*—Lily Family). Native of Australasia. Presented by the New York College of Pharmacy.
6184. Another sample of the preceding. Presented by Lehn & Fink.
6185. Locust resin. False Animi.—The resin from a species of *Hymenaea*. Presented by H. H. Rusby.
6186. Guaiac. Resina guaiaci.—The resin extracted from the wood of *Guaiacum officinale* L. (*Zygophyllaceae*—Caltrop Family). Native of tropical America. Presented by Parke, Davis & Company.
6187. Another sample of the preceding. Presented by J. L. Hopkins & Company.
6188. Euphorbium.—The resinous exudation of *Euphorbia resinifera* Berg. (*Euphorbiaceae*—Spurge Family). Native of Morocco. Presented by the New York College of Pharmacy.
6189. Another sample of the same. Presented by H. H. Rusby.
6190. Powdered euphorbium.—The preceding, in the powdered state. Same donor.

WAXES

6191. Carnauba (See No. 1608).
6192. Another sample of the same. Acquired by J. N. Rose in southern Brazil.
6193. Myrica wax. Bayberry wax. Presented by the New York College of Pharmacy.
6194. Japan wax.—The waxy exudate of *Rhus succedanea* L. and other species of *Rhus* native to China and Japan (*Anacardiaceae*—Sumac Family). Presented by Merck & Company.
6195. Juro wax.—The waxy exudate of a Japanese tree.
6196. An undetermined wax.—Perhaps a form of the preceding.

BALSAMS

6197. Resina Draconis. Dragon's-blood resin.—A solid balsam from the surface of the fruits of various species of *Calamus* (*Palmae*—Palm Family). Native of the East Indies. Presented by Lehn & Fink.
6198. Another sample of the preceding, from the Malay Peninsula. Presented by J. A. Shafer.
6199. The lump-form of the same. Presented by H. H. Rusby.
6200. Balsam-of-Tolu.—A balsam obtained by incising the bark of *Toluifera Balsamum* L. (*Fabaceae*—Pea Family). Native of northern South America. Presented by Parke, Davis & Company.
6201. Balsam-of-Peru.—A balsam obtained from wounds in the bark of *T. Pereirae* (Royle) Baill. Native of Central America. Presented by J. L. Hopkins & Company.
6202. Styrax. Liquid storax.—The balsamic exudate from the bark of *Liquidambar orientalis* Mill. (*Hamamelidaceae*—Witch-hazel Family). Native of Syria. Presented by Parke, Davis & Company.
6203. Another sample of the preceding. Presented by J. L. Hopkins & Company.
6204. Sumatra benzoin. Benzoinum. Gum Benjamin.—The balsamic exudate of *Styrax Benzoin* Dryand (*Styraceae*—Storax Family). Native of southeastern Asia and cultivated. Presented by Parke, Davis & Company.

OLEO-RESINS

6205. Canada balsam, or turpentine. Balsam of fir. Terebinthina canadensis. The oleo-resin obtained by puncturing blisters of the bark of *Abies balsamea* (L.) Mill. (*Pinaceae*—Pine Family). Native of eastern and central North America. Presented by Parke, Davis & Company.

6206. Copaiba.—An oleo-resin obtained from cavities in the trunk of several South American species of *Copaiba* (*Caesalpiniaceae*—Senna Family). Presented by Azensio & Co., of the Madeira Valley, Brazil.

6207. Elemi. Gum elemi.—An oleo-resin exuding from the trunk of *Canarium commune* L. (*Burseraceae*—Myrrh Family). Native of the Philippine Islands. Presented by Seabury & Johnson.

6208. Hard elemi.—The solid form of the preceding. Same donor.

6209. Olibanum. Frankincense.—A gum-resin exuded by several species of *Boswellia* (Same family). Native of northern Africa. Same donor.

6210. Dacryodes gum.—An oleo-resin exuded by *Dacryodes excelsa* Vahl. (Same family). Native of the West Indies. Presented by W. C. Fishlock, 1919.

6211. Gurjun balsam.—An oleo-resin exuded by *Dipterocarpus alatus* Roxb. and other species of *Dipterocarpus* (*Dipterocarpaceae*—Dipterocarpus Family). Native of the East Indies. Presented by Parke, Davis & Co.

6212. Ral. Dhooma. Sal dammar.—An oleo-resin exuded by *Shorea robusta* Gaertn. (Same family). Native of India.

6213. Labdanum. Resina labdanum.—An oleo-resin exuding from various species of *Cistus* (*Cistaceae*—Rockrose Family). Native of the Mediterranean region. Presented by H. H. Rusby.

6214. Gelaton. Jelutong.—The resinous exudate of *Dyera costulata* (See No. 1154). Presented by H. H. Rusby.

GUM RESINS

6215. Myrrh.—The gum-resin exuding from *Commiphora Myrrha* (Nees) Engler (*Burseraceae*—Myrrh Family). Native of northern Africa. Presented by Parke, Davis & Company.

6216. Pipe gamboge. Cambogia.—A gum-resin exuded from incisions in the trunk of *Garcinia Hanburii* Hook. f. (*Guttiferae*—Gamboge Family). Native of southeastern Asia and cultivated. Presented by Lehn & Fink.

6217. Another sample of the same. Presented by Parke, Davis & Company.

6218. Another sample, produced in Siam. Presented by H. H. Rusby.

6219. Pure powdered gamboge.—The preceding drug, in the powdered state. Presented by H. H. Rusby.

6220. Opopanax. Hercules' all-heal.—A gum-resin exuded by *Opopanax Opopanax* (L.) Lyons (*Ammiaceae*—Carrot Family). Native of southern Europe. Presented by the New York College of Pharmacy.

5221. Lump, or block, ammoniac.—The massive form of the exudation of *Dorema ammoniacum* Don. (Same family). Native of Persia. Presented by H. H. Rusby.

6222. Another sample of the same. Presented by the New York College of Pharmacy.

6223. Tear ammoniac.—The same exudation, in the form of pellets, or "tears." Presented by Parke, Davis & Company.

6224. Seed ammoniac.—The same, in the form of very small pellets, or "tears." From the New York College of Pharmacy.

6225. Asafoetida.—The gum-resin obtained by incising the living root of *Ferula foetida* (Bunge) Regel, and probably of other species of *Ferula* (*Ammiaceae*—Carrot Family). Presented by the New York College of Pharmacy.

6226. Powdered asafoetida.—The preceding drug, in the powdered state. Presented by H. H. Rusby.

6227. Galbanum.—A gum-resin exuding from the living root of *F. galbaniflua* Boiss. & Buhse. Native of western Asia. Presented by the New York College of Pharmacy.

6228. Scammony. Scammonium.—A gum-resin obtained by incising the living root of *Convolvulus Scammonium* L. (*Convolvulaceae*—Morning-glory Family). Native of the Levant. Presented by Parke, Davis & Company.

GUMS

Numbers 6229–6248 comprise a series of Arabic, Acacia and Senegal gums, the exudation from *Acacia Senegal* Willd. or other species of *Acacia* (*Mimosaceae*—Mimosa Family). Native of northern Africa. All were presented by Parke, Davis & Company, of New York, unless otherwise stated.

6229. Acacia, white grain.

6230. Acacia, No. 1.

6231. Acacia, No. 2.

6232. Acacia, No. 3.

6233. Acacia, No. 4.

6234. Acacia, No. 5.

6235. Acacia, No. 6.

6236. Acacia, No. 7.

6237. Acacia, in sorts.

6238. Another sample of the preceding. Presented by the New York College of Pharmacy.

6239. Acacia siftings, from sorts.

6240. Sand sifted from Acacia sorts.

6241. Gum Senegal, natural grain.—The grains, or "tears," before being cleaned and assorted.

6242. Gum Senegal, cleaned grain.—The preceding after being cleaned of waste.

6243. Gum Senegal, white grain.

6244. Gum Senegal, small white picked.

6245. Gum Senegal, large white picked.

6246. Gum Senegal, small brown picked.

6247. Gum Senegal in sorts.

6248. Gum Senegal siftings.

6249.

6250. Gum Ghedda, or Jidda.—An inferior quality of gum, yielded by an African species of *Acacia*.

6251. Australian gum Arabic, or Acacia.—A variety of gum produced by *A. decurrens* Willd., the black wattle tree of Australia. Presented by the New York College of Pharmacy.

6252. Mesquit gum.—The gum exuded by species of *Prosopis*, of the same family, native of southwestern North America and South America. Presented by the New York College of Pharmacy.

6253. Another sample of the same. Presented by H. H. Rusby.

6254. Semla gum. Bauhinia gum.—A gum exuded by *Bauhinia retusa* Roxb. (*Caesalpiniaceae*—Senna Family). Native of British India.

Numbers 6255-6263 comprise a series of samples of tragacanth, the gum exuded by *Astragalus gummifer* Labill. (*Fabaceae*—Pea Family), and other species of *Astragalus*. Native of Syria. All, unless otherwise stated, were presented by Parke, Davis & Company of New York City.

6255. No. 1 Turkish Tragacanth.

6256. No. 2 Turkish Tragacanth.

6257. No. 3 Turkish Tragacanth.

6258. Turkish Tragacanth of low grade. Presented by the New York College of Pharmacy.

6259. No. 1 Aleppo Tragacanth.

6260. No. 2 Aleppo Tragacanth.

6261. No. 3 Aleppo Tragacanth.

6262. No. 4 Aleppo Tragacanth.

6263. No. 5 Aleppo Tragacanth.

6264. Atylia gum.—A gum exuded by *Ateleia cubensis* Griseb. (Same family). Native of the West Indies. Acquired by Britton & Cowell at El Moro, Cuba, March, 1912.

6265. India gum. Hog gum. Kutera, or Kathira, gum.—Probably the exudation from *Cochlospermum Gossypium* DC. (*Bixaceae*—Annatto Family). Native of India. Presented by the New York College of Pharmacy.

6266. Another variety of India gum.

6267. Cactus gum.—The exudation of *Carnegiea gigantea* (Engelm.) Britton & Rose (*Cactaceae*—Cactus Family). Native of the southwestern United States. Presented by G. Sykes, of the Desert Laboratory at Tucson, Arizona.

6268. Cashew, or Caju, gum.—A gum exuded by *Anacardium occidentale* L. (See No. 2713). Presented by R. K. Tomlinson, of Jamaica, West Indies.

6269. Another sample of the same, from India. Presented by H. H. Rusby.

6270. Another sample from the same source and donor.

6271. Zizyphus, or Jujuba, gum.—A gum exuded by *Zizyphus Jujuba* Lam. (*Rhamnaceae*—Buckthorn Family). Native of the Old World tropics. From British India.

6272. India gum. Anogeissus gum.—A gum exuded by *Anogeissus latifolia* Wall. (*Combretaceae*—Combretum Family). Native of India. Presented by H. H. Rusby.

6273. Another sample of the same. Same donor.

6274. Socotrine aloes. Aloe Socotrina.—The inspissated juice of the leaves of *Aloe Perryi* Baker (*Liliaceae*—Lily Family), obtained by cutting off the leaves and allowing them to drain. Native of the Island of Socotra, eastern Africa. Presented by Parke, Davis & Company.

6275. Pure powdered Socotrine aloes.—The preceding, in the powdered state. Presented by Merck & Company.

6276. Barbadoes, or Curaçao, aloes. Aloe Barbadensis. Aloe Curassavica.—A similar product obtained from *A. vera* (L.) Webb., native of India and grown in the Barbadoes and Curaçao. Presented by Parke, Davis & Company.

6277. Cape aloes. Aloe Capensis.—A similar product of *A. ferox* Mill., native of South Africa.

6278.

Numbers 6279–6287 illustrate the collection of opium, the inspissated milky juice obtained by incising the unripe capsules of *Papaver somniferum* L. (*Papaveraceae*—Poppy Family). Native of the Mediterranean region and cultivated for ornament, and in many countries for the production of opium. Presented by Lanman & Kemp, of New York City.

6279. Branches of the opium plant, preserved in formaldehyde solution.

6280. Poppy capsules in proper state for incising, preserved in formaldehyde solution.

6281. The same in the dry state.

6282. The knife used for incising the capsules.

6283. The scraper used in scraping the inspissated juice, or opium, from the surface of the capsules.

6284. Another form of the same implement, combining the cutting knife.

6285. Turkish opium.—The crude opium produced in Asia Minor, as it reaches the market.

6286. Rumex, or dock, capsules.—The fruits of various species of *Rumex*, or dock used as packing between the cakes of Turkish opium.

6287. Granulated opium.—Opium refined and converted into a granular form, convenient for the manufacture of certain medicinal preparations.

6288. Papaya, or papaw, fruits.—The fruits of *Carica Papaya* L. (*Caricaceae*—Papaw Family), preserved in formaldehyde solution. Native of tropical America and cultivated for its fruit. Collected by H. H. Rusby at Miami, Florida, February, 1914.

6289. Crude dried papaw juice.—The inspissated milky juice obtained by incising the unripe fruit of the preceding plant. Largely used as a digestant. From the New York drug market. Presented by H. H. Rusby.

6290. Refined dried papaw juice.—The preceding product freed from most of its impurities. Same donor.

6291. Another sample of the same. Same donor.

6292. Crude argols.—The sediment deposited by wine, consisting largely of tartaric acid. Presented by H. H. Rusby.

6293. Kino.—The inspissated juice obtained by incising the trunk of *Pterocarpus Marsupium* Roxb. (*Fabaceae*—Pea Family). Native of India. Presented by the New York College of Pharmacy.

6294. Eucalyptus kino, or "gum."—A similar product obtained from *Eucalyptus calophylla* R. Br. (*Myrtaceae*—Myrtle Family). Native of Australasia. Presented by the New York College of Pharmacy.

6295. Lactucarium.—The inspissated milky juice obtained by incising the stem of *Lactuca virosa* L. (*Cichoriaceae*—Chicory Family). Native of Europe. Presented by Parke, Davis & Company.

6296. Another sample of the same. Presented by H. H. Rusby.

6297. Siam Catechu, or cutch.—An extract prepared by boiling in water the heartwood of *Areca Catechu* (L.f.) Willd. (*Palmae*—Palm Family). Native of tropical Asia. Presented by Parke, Davis & Company.

6298. Another sample of the same. Presented by H. H. Rusby.

6299. Quebracho extract.—An extract obtained by boiling in water the wood and bark of *Quebrachia Lorentzii* (Griseb.) Engler, and other species of *Quebrachia* (*Anacardiaceae*—Sumac Family). Native of Argentine and adjacent regions. Presented by H. H. Rusby.

6300. Manna, in sorts.—An inferior grade of the sugary exudation obtained by incising the bark of *Fraxinus Ornus* L. (*Oleaceae*—Olive Family). Native of southern Europe and cultivated. Presented by H. H. Rusby.

6301. Crude gambir. Pale Catechu.—The crude extract made by boiling in water the leafy twigs of *Ourouparia Gambier* (Roxb.) Baill. (*Rubiaceae*—Madder Family). Native of tropical Asia and cultivated. Presented by H. H. Rusby.

6302. Kavi extract.—Another form of the same. From Siam, through the Field Museum of Natural History.

6303. Cube gambir. Khan. Siet-thet.—A superior grade of the preceding, produced in British India and cut into small cubes. Presented by H. H. Rusby.

6304. Japanese agar-agar.—A gum-like product extracted from the plants of species of *Eucheuma*, *Gelidium*, and other seaweeds. Native of the ocean of eastern Asia. Presented by Lehn & Fink.

6305. Another sample of the same. Presented by Merck & Company.

6306. Raw linseed oil (See No. 1648). Presented by the National Lead Company.

6307. American linseed oil.—The preceding oil expressed from American-grown flax-seed. Same donor.

6308. Refined linseed oil.—The same, freed from its impurities. Same donor.

6309. "AA" linseed oil.—A highly purified grade of the same. Same donor.

6310. Boiled linseed oil.—The same oil, improved for use by boiling. Same donor.

6311. Refined castor oil. Oleum Ricini.—The highly purified fixed or fatty oil expressed from the ripe seeds of *Ricinus communis* L. (See No. 1656). Presented by Baker & Company, of New York.

6312. Croton oil. Oleum Tiglii (See No. 1663).

6313. Refined olive, or sweet, oil. Oleum Olivae.—The highly refined oil expressed from ripe olives (See No. 1696).

6314. Crude camphor.—An aromatic substance obtained by distillation with steam from the wood of the root and portions of the trunk of *Cinnamomum Camphora* (Nees) Engler (*Lauraceae*—Laurel Family). Native of eastern Asia, on the mainland and islands. The specimen shows the form of tub in which the crude camphor is imported. Presented by Baker & Company, of New York City.

6315. Refined camphor.—The preceding substance, refined by redistillation. Same donor.

Poisonous Plants in the Vicinity of New York

This collection is intended to display to the visitor characteristic specimens of all poisonous plants, both wild and cultivated, which commonly occur in the living state in the vicinity of this city. The number of such plants is rather large, although very small as compared with that of the non-poisonous ones. Many people miss considerable enjoyment in their association with living plants because of their unfounded suspicions as to their character. On the other hand, many cases of poisoning, of a more or less severe character, result from a failure to recognize the dangerous individuals among plants. It is believed that a careful study of the contents of this case will enable the visitor to recognize most of the poisonous plants of this vicinity.

Numbers 6316–6316.16 are pictures of poisonous fungi, of which specimens cannot be satisfactorily preserved. These should be compared with those of edible species, Nos. 3312–3317.24.

6316. Lurid Boletus.—*Suillellus luridus* (Schaeff.) Murrill. Native of Europe and America, occurring in clayey soil in woods.

6316.1. Bitter Boletus.—*Tylopilus felleus* (Bull.) P. Karst. Native of North America, growing in the ground in woodlands.

6316.2. Unsafe Inocybe.—*Inocybe infida* (Peck) Earle. Native of Europe and America, growing in grassy places, where the fairy-ring mushroom occurs.

6316.3. Astringent Panus.—*Panellus stypticus* (Bull.) P. Karst. A phosphorescent species, native of temperate regions, growing on stumps.

6316.4. Large-sheathed Vaginata.—*Vaginata agglutinata* (B. & C.) Kuntze. Native of the eastern and central United States, growing in open woodlands.

6316.5. Emetic Russula.—*Russula emetica* Fries. Native of Europe and the eastern United States, growing in leaf-mold.

6316.6. Fetid Russula.—*Russula foetens* Pers. Native of Europe and the United States, growing under oak trees.

6316.7. Sweat-producing Clitocybe.—*Clitocybe sudorifica* Peck. Native of northern New York, growing in grassy places.

6316.8. False Chanterel.—*Chanterel aurantiaca* (Wulf.) Fries. Native of North America, growing in or near decayed wood.

6316.9. Pine-cone Amanita.—*Venenarius solitarius* (Bull.) Murrill. Native of the United States, growing mostly in open places.

6316.10. Deadly Amanita.—*V. phalloides* (Fries) Murrill. Widely distributed, growing mostly in leaf-mold in woods.

6316.11. Fly Amanita.—*V. muscarius* (L.) Earle. Native of temperate regions, growing mostly under pine trees.

6316.12. Booted Amanita.—*V. cothurnatus* (Atk.) Murrill. Native of the north temperate zone.

6316.13. Deceiving Clitocybe.—*Monadelphus illudens* (Schw.) Earle. A phosphorescent species, growing on dead and dying wood in the eastern United States.

6316.14. Veiled stinkhorn.—*Dictyophora duplicata* (Bosc) Ed. Fisch. A very ill-smelling species, growing about buildings and in woods and thickets.

6316.15. Bay-red Lactaria.—*Lactaria rufa* (Scop.) Fries. Native of Europe and occasional in the United States, growing in damp woods.

6316.16. Spotted Collybia.—*Gymnopus carnosus* (Sow.) Murrill. Native of Europe and the eastern United States, growing on or near decayed wood.

6317. American, or creeping, yew. Taxus. Ground hemlock.—The fruiting plant of *Taxus canadensis* Marsh (*Taxaceae*—Yew Family). Native of eastern and central North America. The leaves and seeds are poisonous. Collected by W. N. Clute in Bronx Park, New York, September 8, 1899.

6318. Wild, or Indian, turnip. Jack-in-the-pulpit.—The dried plant of *Arisaema triphyllum* (L.) Torr. (*Araceae*—Arum Family). Native of eastern North America. The bulb is an irritant poison. Collected by P. Wilson in Bedford Park, New York, May, 1899.

6319. Another specimen of the same, preserved in formaldehyde solution. Collected by Clute & Wilson in the same locality, August 2, 1899.

6320. The corm, or bulb, of the same. Same collection as the preceding.

6321. Arrow Arum. Indian head. Tuckahoe.—The flowering plant of *Peltandra virginica* (L.) Kunth. (Same family). Native of the eastern United States. An irritant poison in the raw state, although the aborigines ate the bulb after destroying the poison by prolonged baking. Collected by R. S. Williams in the New York Botanical Garden.

6322. The bulbs of the same.

6323. Lily-of-the-Valley.—The flowering plant of *Convallaria majalis* L. (See No. 1779). Entire plant a heart poison in over-doses. Grown by H. H. Rusby at Newark, New Jersey, May, 1920.

6324. Birth, or beth, root. Wake-robin. Trillium. (See No. 4807). Corm medicinal and poisonous in over-doses.

6325. American green hellebore. Indian poke. Veratrum.—The flowering plant of *Veratrum viride* Ait. (See No. 2466). Rhizome and roots medicinal and a heart-paralyzant in over-doses. Foliage irritant to the skin.

6326. The rootstocks and roots of the preceding. Collected by P. Wilson in Bedford Park, New York, May, 1899.

6327. Fly-poison. Crow-poison. Fall-poison.—The flowering plant of *Chrosperma muscaetoxicum* (Walt.) Kuntze (Same family). Native of the eastern United States. Entire plant poisonous.

6328. Colchicum. Meadow saffron.—The flowering plant of *Colchicum autumnale* L. (See No. 2456). Grown by H. H. Rusby at Newark, New Jersey. Corm and seeds medicinal and poisonous.

6329. Unicorn root. Colic root.—The flowering plant of *Aletris farinosa* (See No. 4802). Corm medicinal and poisonous.

6330. Indian red-root or paint-root. Wool-flower.—The flowering plant of *Gyrotheca capitata* (Walt.) Morong. (*Haemodoraceae*—Bloodwort Family). Native of the eastern United States. Root reported poisonous.

6331. Blue flag. Iris. Fleur-de-lis.—The flowering plant of *Iris versicolor* L. (See No. 4845). Rootstock medicinal and an irritant poison in over-doses. Collected by R. S. Williams in the New York Botanical Garden.

6332. The rootstock of the preceding. Collected by Clute & Wilson in Bronx Park, New York, August 1, 1899.

6333. Blue-eyed grass.—The flowering plant of *Sisyrinchium angustifolium* Mill. (Same family). Native of eastern and central North America. Roots an irritant poison. Same collection.

6334. Stinging nettle.—The flowering plant of *Urtica dioica* L. (*Urticaceae*—Nettle Family). Native of eastern and central North America. The hairs are strongly irritant to the skin.

6335. Indian hemp. Hemp.—The flowering plant of *Cannabis sativa* L. (See No. 551). A narcotic poison. Grown in the New York Botanical Garden.

6336. Horse-sorrel. Sour-grass.—The flowering plant of *Rumex Acetosella* L. (*Polygonaceae*—Knotweed Family). Native of the north temperate zone, and a very common weed in the eastern United States. Contains oxalic acid and has proven fatal when eaten in large quantity as a salad. Collected by H. H. Rusby at Newark, New Jersey.

6337. Pie-plant leaves. Also contain oxalic acid, and have caused death when eaten in large quantity as a salad.

6338. American wormseed.—The flowering plant of *Chenopodium ambrosioides* L. (*Chenopodiaceae*—Goosefoot Family). Native of tropical America and naturalized as a common weed in North America. The seeds are medicinal, and poisonous in over-doses. Collected by J. K. Small, October 6, 1898.

6339.

6340. Pokeberry. Pigeon-berry. Red-ink berry.—The flowering and fruiting branches of *Phytolacca americana* L. (See No. 1727). The root and herbage are violently poisonous, and the seeds somewhat so.

6341. The root of the preceding species.

6342. Aconite. Monk's-hood.—The flowering plant of *Aconitum Napellus* L. (See No. 2532). All parts of the plant, especially the root (which is used in medicine) are deadly heart-paralyzants.

6343. The roots of the preceding species.

6344. Larkspur. Delphinium.—The flowering plant of a species of *Delphinium* (Same family). The larkspurs are natives of the north temperate zone and many are favorite cultivated flowers. All parts are violently poisonous, especially the seeds, which are used in medicine.

6345. Larkspur, or Delphinium, seeds.—The seeds of *D. Consolida* L. or of *D. Ajacis* L. Natives of Europe and cultivated for ornament.

6346. Black cohosh. Cimicifuga.—The flowering plant of *Cimicifuga racemosa* (L.) Nutt. (See No. 4920). The roots and the seeds are poisonous, the former being used in medicine. Collected by Clute & Wilson in Pelham Park, New York, July 28, 1899.

6347. The roots of the preceding species. Collected by Clute & Wilson in Pelham Park, New York, July 28, 1899.

6348. Red baneberry, or Actaea. Red cohosh.—The flowering and fruiting branches of *Actaea rubra* (Ait.) Willd. (See No. 4924). The roots and the berries are poisonous.

6349. White baneberry, or Actaea. White cohosh.—The flowering plant of *Actaea alba* (L.) Mill. (See No. 4923). Collected by P. Wilson in Bedford Park, New York, May, 1899.

6350. The fruits of the same plant. Same collector and locality, August, 1899.

6351. The roots of the same plant. Collected by W. N. Clute in the same locality, July 29, 1899.

6352. Cursed, biting, or ditch, crowfoot or buttercup.—The flowering plant of *Ranunculus sceleratus* L. (Same family). Native of the north temperate zone. Juice violently irritant, causing ulceration of the skin. Collected by P. Wilson in Bedford Park, New York.

6353. The same in formaldehyde solution.—Collected by H. H. Rusby at Secaucus, New Jersey, June 1, 1920.

6354. Common crowfoot or buttercup.—The flowering plant of *R. acris* L. Native of Europe and a common and abundant weed in North America. Less poisonous than the preceding. Same collection as preceding.

6355. Sweet shrub. Strawberry shrub. Calycanthus.—A flowering branch of *Calycanthus florida* L. (*Calycanthaceae*—Strawberry-shrub Family). Native of the southeastern United States and cultivated for its fragrant flowers. The seeds are reported poisonous.

6356. Blue cohosh. Blueberry-root. Papoose-root.—The flowering and fruiting stems of *Caulophyllum thalictroides* (L.) Michx. (See No. 4936). The rhizome and roots are medicinal and violently poisonous. The berries are reported poisonous.

6357. Mandrake. May-apple. Umbrella-leaf.—The flowering stems of *Podophyllum peltatum* L. (See No. 2538). The rhizomes and roots are medicinal and violently poisonous. Several deaths have been reported from eating the unripe fruits. Collected by J. K. Small at Coneibago, Pennsylvania, May 14, 1891.

6358. The rootstocks of the same plant. Collected by P. Wilson at West Orange, New Jersey, July 2, 1899.

6359. The fruits of the same, edible when ripe.

6360. Garden celandine. Chelidonium.—The flowering stems of *Chelidonium majus* L. (See No. 4953). All parts of the plant are irritant and narcotic-poisonous. Collected by P. Wilson in Bedford Park, New York, August, 1899.

6361. The roots of the same plant. Collected by W. N. Clute in Van Cortlandt Park, New York, August 4, 1899.

6362. Bloodroot. Sanguinaria. Red puccoon.—The flowering plant of *Sanguinaria canadensis* L. (See No. 4949). Plant violently acrid and narcotic-poisonous.

6363. The rootstocks of the same. Collected by P. Wilson in Bedford Park, New York, May 20, 1899.

6364. Horseradish (See No. 1526). The root is a popular condiment, but is a cystic irritant if eaten in excess.

6365. The roots of the preceding plant. Collected by Clute & Wilson in Pelham Park, New York, July 28, 1899.

6366. Water cress. (See No. 1528). Irritant in large quantities, like the preceding.

6367. Wild cherry.—The flowering and fruiting branches of *Padus virginiana* (L.) Mill. (See No. 2614). The leaves and seeds yield prussic acid when taken into the stomach with water, and both have caused death. Collected by J. K. Small at Columbia, Pennsylvania, May and July, 1891.

6368. Locust. False Acacia.—The flowering branches of *Robinia pseudacacia* L. (See No. 5209). Bark and seeds narcotic-poisonous. Collected by J. K. Small in Smith County, Virginia, May 14, 1892.

6369. Wild indigo. Dyer's green-weed. (See No. 1297). The roots are medicinal and poisonous in over-doses.

6370. The roots of the preceding species.

6371. Wood-sorrel. Ladies' sorrel. Shamrock.—The flowering plant of *Oxalis Acetosella* L. (See No. 2677). Contains oxalic acid and has caused poisoning when eaten in excess as a salad.

6372. Castor-oil plant.—The flowering branches of *Ricinus communis* L. (See No. 1656). The seeds are violently poisonous.

6373. The seeds of the preceding.

6374. Rue. Garden rue. Ruta.—The flowering branches of *Ruta graveolens* L. (See No. 2688). It contains an extremely poisonous volatile oil.

6375. Poison ivy. Three-leaved ivy. Mercury.—The flowering and fruiting branches of *Toxicodendron radicans* (L.) Kuntze (*Anacardiaceae*—Sumac Family). Native of eastern and central North America. The plant contains a fatty oil that produces intense poisoning of the skin of many persons. Collected by J. K. Small at Lancaster, Pennsylvania, August 15, 1899.

6376. The same in formaldehyde solution.

6376.1. Spotted touch-me-not.—The herbage of *Impatiens biflora* Walt. (*Balsaminaceae*—Balsam Family). Native of eastern and central North America. Collected by H. H. Rusby. The fresh juice is said to be an antidote to ivy poisoning, and it is therefore here included.

6377. Poison dogwood. Poison oak. Poison sumac.—The flowering and fruiting. branches of *T. Vernix* (L.) Kuntze. Native of eastern North America. Poisonous like No. 6375. Collected by P. Wilson at Woodlawn, New York, August 17, 1899.

6378. Poison oak.—The branches of *T. diversifolia* (Engelm.) Greene. Native of western North America. Collected by H. H. Rusby in the San Bernardino Mountains, California, August 3, 1909. Poisonous like the preceding.

6379. Dwarf poison oak.—The branches of *T. Rydbergii* (Small) Greene. Native of the Rocky mountains. Poisonous like the preceding. Collected by H. H. Rusby in Buffalo Creek Cañon, Colorado, September 14, 1909.

6380. Guao.—The leaves of *Comocladia cladophylla* Rich. (Same family). Native of the West Indies. Violently poisonous like the preceding. Collected in Cuba, July, 1906, and presented by H. H. Rusby.

6381. Cardol.—A fatty poisonous substance existing in the preceding five species and in many others of the same family. Presented by Merck & Company.

6382. Horsechestnuts. Aesculus.—The flowering and fruiting branches of *Aesculus Hippocastanum* L. (*Hippocastanaceae*—Horse-chestnut Family). Native of Asia and everywhere cultivated for ornament. The seeds and the bark are poisonous. Collected in the New York Botanical Garden.

6383. The seeds of the same plant.

6384. American horsechestnut. Ohio buckeye.—The flowering branches of *A. glabra* Willd. Native of the central United States and cultivated for ornament. Same properties as the preceding.

6385. The seeds of the preceding.

6386. Red, or little, buckeye. Fish poison.—The flowering branches of *A. parviflora* Walt. Native of the southeastern United States and having the properties of the last. Used to poison fish. From the New York Botanical Garden.

6387. The seeds of the preceding species.

6388. Balloon vine. Heart-pea. Heart-seed. Indian heart.—The flowering and fruiting branches of *Cardiospermum Halicacabum* L. (*Sapindaceae*—Soapberry Family). Native of tropical America and much cultivated in gardens as an ornamental climber. Entire plant poisonous, especially the seeds.

6389. American water hemlock. Death-of-man. Beaver poison.—The flowering and fruiting stems of *Cicuta maculata* L. (*Ammiaceae*—Carrot Family). Native of eastern and central North America and abundant in wet grounds about New York City. A very violent poison and responsible for many deaths, mostly from eating its tubers.

6390. The tubers of the preceding species.

6391. Poison hemlock. Spotted, or poison, parsley.—The flowering and fruiting stems of *Conium maculatum* L. (See No. 2764). Entire plant, especially the fruits, a deadly poison. It is the poison with which Socrates was executed. Collected by J. K. Small at Lancaster, Pennsylvania, June, 1891.

6392. The fruits of the same plant. From the New York drug market. Presented by H. H. Rusby.

6393. Wild parsnip. Pastinaca.—The flowering and fruiting tops of *Pastinaca sativa* L. (Same family). Native of Europe and cultivated for its edible root. The wild plant is reputed to be somewhat poisonous. Collected by J. K. Small at Lancaster, Pennsylvania, July 25, 1890.

6394. Great laurel. Rose bay. Rhododendron.—The flowering branches of *Rhododendron maximum* L. (*Ericaceae*—Heath Family). Native of eastern North America and cultivated for ornament. Leaves narcotic-poisonous.

6395. Mountain laurel. Calico-bush.—The flowering branches of *Kalmia latifolia* L. (Same family). Native of eastern North America. The leaves have the same properties as those of the preceding species. Collected by J. K. Small in Smith County, Virginia, July 16, 1892.

6396. Sheep laurel. Lamb-kill.—The flowering branches of *K. angustifolia* L. Same family, home, and properties as the preceding.

6397. Stagger-bush. Lamb-kill.—The flowering branches of *Neopieris mariana* (L.) Britton (Same family). Native of the eastern coast region of the United States. The leaves possess the same properties as those of the preceding.

6398. Labrador, continental, or James', tea.—The flowering branches of *Ledum groenlandicum* Oeder. (See No. 1993). Native of the northern portions of the north temperate zone. Leaves used as a substitute for tea but a

narcotic poison in excessive amount. Collected by W. N. Clute in New Jersey bogs, in 1899.

6399. Dogbane. Bitter-root.—The flowering and fruiting branches of *Apocynum androsaemifolium* L. (*Apocynaceae*—Dogbane Family). Native of eastern and central North America. All parts of the plant, but especially the rootstock and root, are an active heart-poison.

6400. Canadian, or black Indian, hemp. Indian physic.—The flowering and fruiting branches of *A. cannabinum* L. (See No. 2816). Possesses the same properties as the preceding, and the rootstock is an important heart medicine.

6401. The rootstock and roots of the same plant. Collected by Clute & Wilson in the New York Botanical Garden, August 4, 1899.

6402. The fruits of the same. Same collection as the preceding.

6403. White dogbane.—The flowering and fruiting branches of *A. album* Greene. Native of the eastern United States. Collected by J. K. Small at Wrightsville, Pennsylvania, July 7, 1890.

6404. Oleander.—The flowering branches of *Nerium Oleander* L. (Same family). Native of the Mediterranean region and universally cultivated for its beauty and fragrance. The leaves are a deadly heart-poison.

6405. Running myrtle. Periwinkle. Hundred eyes.—The flowering stems of *Vinca minor* L. (Same family). Native of Europe and a favorite ornamental evergreen trailer in the United States, where it has become wild in some places. The leaves are less poisonous than those of the preceding. Grown by H. H. Rusby at Newark, New Jersey.

6406. Bittersweet. Dulcamara.—The tempting red berries are somewhat poisonous. Collected by J. K. Small at Lancaster, Pennsylvania, July 20, 1892.

6407. Belladonna. Deadly nightshade.—The flowering and fruiting tops of *Atropa Belladonna* L. (See No. 2850). Native of Europe and cultivated as a drug. Occasionally found wild in the United States. The whole plant is a deadly narcotic poison.

6408. Stramonium. Stink-weed. Jimson-weed. Thorn-apple (See No. 2861). All parts of the plant are medicinal and deadly poisonous, and the cause of very many fatal accidents. Collected by R. Ringe in New York City, September 10, 1899.

6409. Fruits of the same.

6410. The roots of the same plants. Collected by Clute & Wilson in Bedford Park, New York, July 29, 1899.

6411. Purple stramonium or thornapple.—The flowering and fruiting branches of *Datura Tatula* L. Native of South America and a common weed in the United States. Same properties and collector as the preceding.

6412. The roots of the same.

6412.1. Henbane (See No. 2864). All parts of the plant are strongly poisonous.

6413. Tobacco (See No. 2066). Its poisonous properites are universally known.

6414. Leptandra. Culver's root or physic (See No. 2873). The roots are irritant-purgative.

6415. The rootstock and roots of the preceding species. Collected by Clute and Wilson at Kingsbridge, New York, August 4, 1899.

6416. Digitalis. Foxglove (See No. 2875). All parts of the plant are a deadly heart-poison.

6417. Toad-flax. Butter-and-eggs.—The flowering stems of *Linaria Linaria* (L.) Karst. (See No. 716). The plant is emetic and somewhat poisonous. Collected by J. K. Small at Lancaster, Pennsylvania, October 11, 1890.

6418. Horse, or white, gentian or ginseng. Fever-root. Wild, or wood, ipecac. Wild coffee.—The flowering stems of *Triosteum perfoliatum* L. (*Caprifoliaceae*—Honeysuckle Family). Native of eastern and central North America. Root emetic and somewhat poisonous.

6419. The rootstocks and roots of the preceding species. Collected by W. N. Clute in Bronx Park, New York, August 14, 1899.

6420. Orange-colored horse gentian.—The flowering stems of *T. aurantiacum* Bicknell (See No. 5091). Collected by J. K. Small at Safe Harbor, Pennsylvania, June 8, 1899.

6421. Black elderberry.—The flowering and fruiting branches of *Sambucus canadensis* L. (See No. 2344). (Same family.) Native of eastern and central North America. The herbage, especially the root, is highly poisonous and fatal accidents have resulted from eating the latter. Collected by P. Wilson, June 14, 1899.

6422. The roots of the preceding plant. Collected by Clute & Wilson in the New York Botanical Garden, August 14, 1899.

6423. The fruits of the same. Same collection as preceding.

6424. Lobelia. Indian tobacco. Asthma weed (See No. 2918). A powerful emetic and narcotic poison, and a useful medicine.

6425. Great Lobelia. Blue cardinal flower.—The flowering plant of *Lobelia syphilitica* L. Same region as the preceding, and somewhat less poisonous. Collected by P. Wilson in Bedford Park, New York, September 5, 1899.

6426. Cardinal flower. Scarlet Lobelia. The flowering stems of *L. cardinalis* L. Native of eastern and southeastern North America. Poisonous like the preceding. Causes abortion in cattle. Collected by Clute & Wilson in Bedford Park, New York, August 29, 1899.

6427. The roots of the preceding.

Insecticides

Insecticides are substances used to destroy injurious or troublesome insects. In practice, the term is often made to include also substances used to repel such insects. The insects may be injurious to man, to the lower animals, or to plants. Many of these substances are inorganic, but a number of them consist of parts or products of plants, and of these it is our intention to form a complete collection.

6428. Cevadilla. Sabadilla (See No. 2461). Used to destroy vermin on the animal body.

6429. Fly-poison.—The plant of *Chrosperma muscaetoxicum* (Walt.) Kuntze (*Melanthaceae*—Bunch-flower Family). Native of the eastern and southeastern United States. Used to kill flies and other insects.

6430. White hellebore.—The rootstock and roots of *Veratrum album* L. (See No. 4796). One of the most largely used insecticides for vegetable parasites.

6431. Staphisagria. Stavesacre (See No. 2517). Largely used for destroying vermin of the scalp.

6432. Larkspur. Delphinium (See No. 6083). Used like the preceding.

6433. Black hellebore (See No. 2522). Used like the preceding.

6434. Cocculus indica. Fish-berries (See No. 2544). Used like the preceding, and also to stupefy fishes.

6435. Ailanthus leaves. Tree-of-Heaven.—The leaves of *Ailanthus glandulosa* Desf. (*Simaroubaceae*—Quassia Family). Native of China and planted in the United States for ornament. The leaf extract is fatal to flies and other insects.

6436. Tobacco stems.—The stems of *Nicotiana Tabacum* L. (See No. 2066). The extract is fatal to a great variety of troublesome insects. Presented by the Hammond Slug-shot Company, of Fishkill, New York.

6437. Powdered tobacco.—The preceding in the powdered state.

6438. Scrophularia powder. An insecticide containing the preceding. Same donor.

6439. Grape-dust.—An insecticide specially valuable for destroying grape-vine insects, and containing powdered tobacco. Same donor.

6440. Slug shot. Another insecticide of similar composition. Same donor.

6441. Sheep-wash.—An insecticide containing extract of tobacco, and used to destroy ticks on sheep. Same donor.

6442. Dalmatian insect flowers of first quality.—Consisting of the unexpanded flower-heads of *Chrysanthemum cinerariaefolium* Trev. (*Carduaceae*—Thistle Family). Native of southeastern Europe and adjacent Asia. A standard insecticide for bed-bugs and other insect vermin. Presented by McCormick & Company, of Baltimore, Maryland.

6443. Dalmatian insect flowers of second grade. The half-opened flower-heads of the preceding species. Same donor.

6444. Dalmatian insect flowers of third grade.—The expanded flower-heads of the same. Same donor.

6445. Dalmatian insect powder.—The powdered flower-heads of the preceding species.

6446. Insect flower stems.—The stems of the preceding species, having very little insecticidal activity but largely used as a fraudulent adulterant of, or substitute for the flowers.

6447. Powdered insect flower stems.—The preceding, in the powdered state, ready to be sold for insect powder.

6448. Hungarian daisies. Ox-eye daisies.—The flower-heads of *Leucanthemum Leucanthemum* (L.) Rydb. Native of Europe and an abundant weed in the United States. Used as a fraudulent adulterant of insect powder.

Woods and Wood Products

Our collection of timber-woods and their products can scarcely be considered as more than indicative of the

character of such an exhibit. The cost of securing and transporting large wood-sections from distant regions is so great that anything like a complete representation of the trees of the world cannot be undertaken under present conditions. A number of small collections have been presented by exhibitors at international fairs, and our own collectors have secured many specimens. All of these are arranged consecutively, in the order of their botanical sequence.

THE PINE FAMILY (*Pinaceae*)

6449. Akamatsu.—A trunk section of *Pinus densiflora* Sieb. & Zucc. Native of eastern Asia. From Japan.

6450. West Indian pine.—A trunk section of *P. occidentalis* Sw. Native of the West Indies. Collected by G. V. Nash in Porto Rico, 1903.

6451. European nut-pine.—A trunk section of *P. Pinea* L. Native of the Mediterranean region. From Grosseto, Italy, through the Paris Exposition of 1900.

6452. Mountain pine.—A trunk section of *P. Laricio* Poir. Native of southern Europe. From Porto Mauritzio, Italy, through the Paris Exposition of 1900.

6453. Redwood bowl.—A bowl made of the wood of *Sequoia Washingtoniana* (Winslow) Sudworth. From Eureka, California. Presented by Rodney Burns, April, 1907.

6454. Redwood birl nut-dish.—A nut-dish carved from a birl of the preceding species. Presented by H. H. Rusby.

6455. Redwood bark pin-cushion.—A pin-cushion made of the bark of the preceding species, ornamented with the cones of the same. Same donor.

6456. Cypress. Oriental cypress.—A trunk section of *Cupressus sempervirens* L. Native of Europe and Asia. From Florence, Italy, through the Paris Exposition of 1900.

6457. Koya-maki.—A block of the wood of *Sciadopitys verticillata* Sieb. & Zucc. Native of eastern Asia. From Japan.

6458. Shirabe.—A block of the wood of *Abies Veitchii* Lindl. Native of eastern Asia. From Japan.

6459. Momi veneering.—Veneering made of the wood of *A. firma* Sieb. & Zucc. Native of eastern Asia. From Japan.

6460. Sawara timber.—A block of the wood of *Chamaecyparis pisifera* Sieb. & Zucc. Native of eastern Asia. From Japan.

6461. Nezuco. Another sample of the preceding.

6462. Sawara veneering.

6463. Another sample of the same.

6464. Hinoki veneering.—Veneering made of the wood of *C. obtusa* Sieb. & Zucc. Native of eastern Asia. From Japan.

6465. Sawara.—A block of the wood of *Thuya japonica* Maxim. Native of Japan. From Japan.

6466. Hiba, or Asuki, shingles.—Shingles made of the wood of *T. dolabrata* L.f. Native of eastern Asia. From Japan.
6467. Australian pine.—A block of the wood of *Araucaria Cunninghamii* Sweet. Native of Australia. From New South Wales.
6468. Sugi.—A trunk section, without bark, of *Cryptomeria japonica* D. Don. Native of eastern Asia. From Japan.
6469. Sugi shingles.—Shingles made from the preceding wood.
6470. Sugi roofing.—Roofing slabs made of the same wood.
6471. Sugi veneering.—Veneering made from the same wood.
6472. Fancy Sugi box.—A small fancy box made of the same wood.
6473. Savin. Sabina.—A trunk section of *Juniperus Sabina* L. Native of the north temperate zone. From Grosseta, Italy, through the Paris Exposition of 1900.
6474. Common juniper.—A trunk section of *J. communis* L. Native of the north temperate zone. From Grosseta, Italy, through the Paris Exposition of 1900.
6475. Brown-berried juniper.—A trunk section of *J. Oxycedrus* L. Same home and source as preceding.

THE YEW FAMILY (*Taxaceae*)

6476. Maki.—A block of the wood of *Podocarpus macrophylla* D. Don. Native of eastern Asia. From Japan.
6477. Podocarpus cane.—A cane made of the wood of *P. coriacea* Rich. Native of tropical America. Obtained by D. T. MacDougal in Jamaica, in July, 1903.
6478. Araragi.—A block of the wood of *Taxus cuspidata* Sieb. & Zucc. Native of western Asia. From Japan.
6479. Kaya.—A block of the wood of *Tumion nuciferum* (L.) Greene. Native of eastern Asia. From Japan.

6480. Icho.—A block of the wood of *Ginkgo biloba* L. (*Ginkgoaceae*—Ginkgo Family). Native of eastern Asia. From Japan.

THE GRASS FAMILY (*Gramineae*)

6481. Corn-cobs.—The rachis of the fruiting inflorescence of *Zea Mays* L. Native of tropical America and cultivated in all warm and temperate regions.
6482. Unfinished corn-cob pipes. Presented by William Demuth and Company, of New York.
6483. Ten finished corn-cob pipes. Same donor.
6484. Reed flutes.—Flutes made by the Yuma Indians, of Arizona, from the stems of *Phragmites Phragmites* (L.) Karst. Native of the north temperate zone. Acquired by D. T. MacDougal in April, 1904.
6485. Giant bamboo. (On top of cases).—An exceptionally large giant bamboo trunk. Native of tropical Asia. From Japan.
6486. Two bamboo sections.—Sections of the trunk of a species of bamboo. Collected by H. H. Rusby at Sacupana, Lower Orinoco, Venezuela, April, 1896.

6486.1. Bamboo flower pots.—Flower pots, each consisting of a joint of a bamboo stem. Obtained by N. L. Britton at Trinidad, West Indies, 1920.

6487. Three Japanese rice-roots.—The stem-bases of a species of bamboo used for parasol-handles. Presented by Edward Bennecke & Brother, of New York.

6488–6489. Bamboo stick and cane.—The stem of an undetermined species of bamboo and a cane made from the same. Presented by William Demuth & Company, of New York.

6490–6492. A bamboo stick and two bamboo canes from the same donor.

6493–6495. Two bamboo sticks and one finished cane of the same. Same donor.

THE PALM FAMILY (*Palmae*)

6496–6497. Midgeon stick and cane.—The stem and root-base of an undetermined species of palm, probably a rattan (*Calamus* sp.), used for canes, and a finished cane made of another rattan palm.

6498. The stem and root-base of another rattan palm.—Another palm stem, apparently of a different species.

6499–6500. Two finished Penang canes, made of rattan palm stems.

6501. Penang stick, from which canes like the preceding are made.

6502–6505. Rattan sticks.—Four sticks, consisting of the stem of a species of *Calamus*. Presented by Bennecke Bros., of New York.

6406–6508. Supple Jack.—Three stem sections of a species of palm. Collected by H. H. Rusby at Santa Catalina, Lower Orinoco, Venezuela, in April, 1896.

6509–6510. Gru-gru canes.—Two canes made of the stems of *Aiphanes corallina* Wendl. Native of the West Indies. Obtained by D. T. MacDougal, July, 1903.

6511. Coconut cane.—A cane made of the stem of the young coconut tree, *Cocos nucifera* L., cultivated in Jamaica, West Indies. Acquired by D. T. MacDougal, July, 1903.

6512. Coconut stirring-spoon, or ladle.—Made of the preceding wood. Acquired by P. Wilson in Singapore, June, 1901.

6513–6516. Coconut shell ladles.—Three ladles, the bowls of which are made of the shells of the fruit of the preceding species. Acquired by P. Wilson in Porto Rico, in 1902.

6516–6518. Coconut shell dippers.—Three dippers, the bowls of which are made of the same. Same collection as the preceding.

6519. Carved box made of a coconut shell. Presented by R. S. Williams.

6520. Another of the same, with a carved map of South America. Presented by Ernest Stauffen, of New York City.

6521. Biro.—A trunk section of *Livistona chinensis* R. Br. Native of eastern Asia. From Japan.

6522. Bactris.—A trunk section of the stem of an undetermined species of *Bactris*. Collected by H. H. Rusby in the lower Orinoco River, Venezuela, April, 1896.

6523. Bactris.—Another section, probably of *B. Plumeriana* Mart. Native of the West Indies. Acquired by G. V. Nash in Haïti, 1903.

6524. A cane apparently made from the stem of a plant in the *Araceae*, or Arum family. Presented by William Demuth & Co., of New York.

6525. Yucca.—Apparently a trunk section of a species of *Yucca* (*Dracaenaceae*—Dracaena Family).

6526–6527. Century-plant razor strops.—Two razor strops made of the wood of *Agave Morrisii* Baker (*Amaryllidaceae*—Amaryllis Family). Native of the West Indies. Acquired by N. L. Britton in Jamaica, West Indies, September, 1907.

6528. The same, perhaps of the same species. Acquired by J. A. Shafer in Antigua, West Indies, February, 1907.

6529–6530. The same, the species undetermined. Acquired by F. E. Lloyd in Dominica, August, 1903.

6531. Forest oak shingles.—Shingles made of the wood of *Casuarina torulosa* Dryand (*Casuarinaceae*—Casuarina Family).

THE WILLOW FAMILY (*Salicaceae*)

6532–6533. Diamond willow stick and cane.—The stem of *Salix cordata* Muhl. Native of the central United States. From eastern Nebraska. Presented by C. E. Bessey, of Lincoln, Nebraska.

6534. Poplar barrel stave.—A barrel stave made of the wood of *Populus deltoides* Marsh. Native of eastern North America. Presented by C. Heidt & Sons, of Jersey City, New Jersey.

6535–6536. Two Russian poplar bowls.—Bowls made in Russia from the wood of a species of *Populus*.

6537–6539. Russian poplar wood, and unfinished and finished spoon.—Russian spoons and a piece of the poplar wood from which they are made. From the Paris Exposition of 1900.

6540–6543. Varnished Russian poplar wood spoons of the same.

6544. Russian poplar wood ladle.—A ladle made of the preceding wood. Same source.

6545–6546. Hickory stick and cane.—A stick of *Hicoria ovata* (Mill.) Britton (*Juglandaceae*—Walnut Family), and a cane made from the same. Native of eastern North America. Presented by William Demuth & Company, of New York.

6547. Japanese walnut.—A block of the wood of *Juglans* sp. (Same family). Native of eastern Asia. From Japan.

6548. Sawa-gurumi.—A block of the wood of *Pterocarya rhoifolia* Sieb. & Zucc. (Same family). Native of eastern Asia. From Japan.

THE BIRCH FAMILY (*Betulaceae*)

6549. Paper-birch dowel-stick.—A dowel-stick made of the wood of *Betula papyrifera* Marsh. Native of northeastern North America. Presented by G. Josephi, of New York, April, 1903.

6550–6661 comprise a series of turned articles from the wood of the American white birch, *B. populifolia* Marsh. Native of eastern and central North America. Presented by E. B. Estes & Son, of New York City.

6550. Five small spinning tops.
6551. A box to hold the tops.
6552–6553. Two fancy colored boxes.
6554. An ornamental colored box in the form of a rolling-pin.
6555. Another in the form of an Indian club.
6556–6557. Two others, in the form of torpedoes.
6558. A fancy darning block.
6559. Fancy box in the form of a barrel.
6560–6561. Two fancy varnished boxes.
6562. Another, filled with tooth-picks.
6563–6576. Fourteen small wooden bottles.
6577–6587. Eleven turned boxes.
6588–6599. Twelve of the same, of different style.
6600–6614. Fifteen others.
6615–6642. Twenty-eight very small similar boxes.
6643–6650. Eight others of low form.
6651–6661. Eleven others of low form.
6662. Ten cotton spools of the same wood. Presented by the Clark Thread Company of Newark, New Jersey.
6663. Six spools of various sizes, from the same donor.
6664. Eighteen colored spools of the same.
6665. Eight very large spools of the same. Same donor.
6666. European alder.—A trunk section of *Alnus glutinosa* (L.) Medic. Native of Europe. From Florence, Italy, through the Paris Exposition of 1900.
6667. Heart-leaved alder.—A trunk section of *A. cordifolia* Tenore. Native of Europe. From Cosenza, Italy, through the Paris Exposition of 1900.
6668. Minebari.—A block of the wood of *A. firma* Sieb. & Zucc. Native of eastern Asia. From Japan.

THE BEECH FAMILY (*Fagaceae*)

6669. Soro. Shide.—A block of the wood of *Carpinus laxiflora* Blume. Native of eastern Asia. From Japan.
6670. A section of the same wood, without bark.
6671. American beech-wood broom handle.—A broom handle made of the wood of *Fagus grandifolia* Ehrh. Native of eastern and central North America. Presented by G. Josephi.
6672. American beech-wood barrel stave.—A barrel stave of the same wood. Presented by C. Heidt & Sons, of Jersey City, New Jersey.
6673. Beech-wood vinegar shavings.—Used for clarifying vinegar. Presented by the Redlich Manufacturing Company, of Chicago, Illinois.
6674. Brewers' beech-wood shavings.—The same as the preceding, but used for the clarification of beer. Same donor.
6675. Huri shingles.—Shingles made of the Japanese chestnut, *Castanea japonica* Blume. From Japan.
6676. Croatian chestnut umbrella handles.—Five unfinished umbrella handles made of the stems of Croatian chestnut, *C. Castanea* (L.) Karst. Native of Europe. Presented by Edward Bennicke & Company, of New York.
6677. Another lot of three, each tied in a knot.

6678. One of the same in finished state.
6679. Eight sticks of the same character.
6680. "Congo" canes. Two canes made of the same wood as the preceding.
6681. Kermes oak.—A trunk section of *Quercus coccifera* L. Native of southern Europe. From Palermo, Italy, through the Paris Exposition of 1900.
6682. Macedonian oak.—A trunk section of *Q. macedonica* A. DC. Native of southern Europe. From Potenza, Italy, through the Paris Exposition of 1900.
6683. Shirakashi.—A block of the wood of *Quercus* sp. Native of eastern Asia. From Japan.
6684. Red-oak barrel stave.—A barrel stave made of the wood of *Q. rubra* L. Native of eastern North America. Presented by C. Heidt & Son, of Jersey City, New Jersey.
6685. Bog-oak umbrella handle.—A carved umbrella handle made of the wood of *Quercus* sp. Presented by William F. Gaynor, October, 1904.
6686. Shira-no-ki.—A block of the wood of *Q. cuspidata* Thunb. Native of eastern Asia. From Japan.
6687. Ake-gashi.—A block of the wood of *Q. acuta* Thunb. Native of eastern Asia. From Japan.
6688. Ichi-gashi.—A block of the wood of *Q. gilva* Blume. Native of eastern Asia. From Japan.

6689. Rock-elm mouse trap.—A mouse trap of which the base is made of the wood of *Ulmus Thomasi* Sargent. Native of northern North America. Presented by the Animal Trap Company, of Abingdon, Illinois.
6690. A rat trap of the same. Same donor.
6691. American elm barrel stave.—A barrel stave made of the wood of *U. americana* L. Native of eastern and central North America. Presented by C. Heidt & Son, of Jersey City, New Jersey.
6692. American elm dressed barrel hoops.—A bundle of five dressed barrel hoops of the wood of the same tree. Same donor.

THE MULBERRY FAMILY (*Moraceae*)

6693. Trophis wood.—A trunk section of *Trophis americana* L. Native of tropical America. Acquired by G. V. Nash in Haïti, in 1903.
6694. European sugar-berry.—A trunk section of *Celtis australis* L. Native of southern Europe. From Pisa, Italy, through the Paris Exposition of 1900.
6695. Trumpet-wood.—A trunk section of *Cecropia peltata* L. Native of tropical America. Same source as preceding.
6696. Chaplash.—A trunk section of *Artocarpus Chaplasha* Roxb. Native of the East Indies. From British India.
6697. Breadfruit.—A trunk section of *A. incisa* L. Native of the Malay region and cultivated in tropical countries. Acquired by G. V. Nash in Haïti, in 1903.
6698. Wild fig.—A trunk section of *Ficus mitrophora* Warb. Native of the West Indies. Same source as preceding.

6699. Keyaki.—A board made of the wood of *Zelkova Keaki* Maxim. (*Urticaceae*—Nettle Family). Native of eastern Asia. From Japan.

6700. Casimiroa.—A trunk section of *Casimiroa edulis* La Llave (*Rutaceae*—Rue Family). Native of Mexico.

6701. Checquered grape-tree.—A trunk section of *Coccolobis diversifolia* Jacq. (*Polygonaceae*—Knotweed Family). Native of the West Indies. Acquired by G. V. Nash at Inagua, in 1904.

6702. Sea-grape.—A trunk section of *C. Uvifera* L. Native of tropical and subtropical America. Acquired by G. V. Nash in Haïti, in 1903.

6703. Pigeon-plum. A trunk section of *C. laurifolia* Jacq. Same home as the preceding. Acquired by G. V. Nash in Inagua, in 1904.

6704. Cockspur.—A trunk section of *Pisonia aculeata* L. (*Nyctaginaceae*—Four-o'clock Family). Native of tropical America. Acquired by G. V. Nash in Haïti, in 1903.

6705. Blolly.—A trunk section of *Torrubia longifolia* (Heimerl.) Britton. Native of the West Indies and Florida. Acquired by G. V. Nash in Inagua, in 1904.

6706. Virgin's bower.—A trunk section of *Clematis Flammula* L. (*Ranunculaceae*—Buttercup Family). Native of the Mediterranean region. From Cagliari, Italy, through the Paris Exposition of 1900.

6707. Pila-champa.—A block of the wood of *Michelia* sp. (*Magnoliaceae*—Magnolia Family). Native of the East Indies. From British India.

6708. Katsura.—A block of the wood of *Cercidiphyllum japonicum* Sieb. & Zucc. (Same family). Native of eastern Asia. From Japan.

6709. Mountain sour-sop.—A trunk section of *Annona montana* MacF. (*Annonaceae*—Custard-apple Family). Native of the West Indies. Acquired by G. V. Nash in Haïti, in 1903.

6710. Alligator apple.—A trunk section of *A. palustris* L. Native of tropical and subtropical America. Acquired by G. V. Nash in Haïti, in 1903.

THE LAUREL FAMILY (*Lauraceae*)

6711–6712. California laurel.—Two polished slabs of the wood of *Umbellularia californica* (H. & A.) Nutt. Native of the Pacific coast region of the United States. Acquired by H. H. Rusby at the Seattle Exposition of 1909.

6713. Three small polished dishes said to be made of the same wood. Same donor.

6714. A slab of wood, apparently of the same species.

6715. A cane, perhaps made of the preceding wood.

6716. Avacado. Alligator pear.—A trunk section of *Persea Persea* (L.) Cockerell. Native of tropical America and cultivated for its fruit. Acquired by G. V. Nash in Haïti, in 1903.

6717. Tropical Sassafras.—Two trunk sections of an undetermined tree of the Orinoco River Valley. Acquired by H. H. Rusby at Manoa, Venezuela, in May, 1896.

6718. Medang.—A block of wood, probably of *Phoebe holosericea* Blume. Native of the East Indies. From Sumatra.

6719. Medang shoes.—Shoes made of the preceding wood, and worn by the Klugs of Singapore, where they were acquired by P. Wilson, in June, 1901.

6720. Lance-wood.—A trunk section of *Oxandra lanceolata* (Sw.) Baill. Native of tropical America. Acquired by G. V. Nash in Haïti, in 1903.

6721. Bay Laurel.—A trunk section of *Laurus nobilis* L. Native of southern Europe. From Rome, Italy, through the Paris Exposition of 1900.

6722. Kusu-no-ki. Camphor-wood.—A block of the wood of *Cinnamomum Camphora* (L.) T. Nees & Eberm. Native of eastern Asia. From Japan.

6723. Horseradish tree. Murinna.—A block of the wood of *Moringa Moringa* (L.) Small (*Moringaceae*—Horseradish-tree Family). Native of the East Indies. From British India.

6724. Say.—A block of the wood of *Weinmannia Balbisiana* H. B. K. (*Cunoniaceae*—Cunonia Family). Native of tropical America. From Venezuela.

6725–6727. Cork-wood. Alligator wood.—Two young stems and a cane from *Liquidambar Styraciflua* L. (*Hamamelidaceae*—Witch-hazel Family). Native of southeastern North America. Presented by William Demuth & Company, of New York City.

6728. Eastern, or Oriental, sycamore.—A trunk section of *Platanus orientalis* L. (*Platanaceae*—Sycamore Family). Native of Asia and cultivated for shade and ornament. From Palermo, Italy, through the Paris Exposition of 1900.

6729. Hybrid mountain ash.—A trunk section of *Sorbus hybrida* L. (*Malaceae*—Apple Family). Native of Europe and cultivated for ornament. From Como, Italy, through the Paris Exposition of 1900.

6730. Kwarin.—A trunk section of *Pyrus sinensis* Poir. (Same family). Native of eastern Asia. From Japan.

6731. Cotoneaster.—A trunk section of *Crataegus Pyracantha* Medic. (Same family). Native of Italy, through the Paris Exposition of 1900.

6732. English hawthorn.—A trunk section of *C. Oxyacantha* L. Same home and source as the preceding.

6733–6737. Four unfinished, and one finished, pipe, made from the wood of the apple (See No. 2608). Presented by William Demuth & Company, of New York.

6738. Purple-heart.—A trunk section of *Parinarium campestre* Aub. (*Amygdalaceae*—Plum Family). Collected by H. H. Rusby at Manoa, lower Orinoco, Venezuela, May, 1896.

6739. Cherry laurel.—A trunk section of *Padus Laurocerasus* Mill. (See No. 1861). From Rome, Italy, through the Paris Exposition of 1900.

6740. Cocomilia plum.—A trunk section of *Prunus Cocomilia* Tenore. Same home and source as preceding. From Cosenza, Italy.

6741. Weichsel. Scented cherry.—Four stems and root-bases of young trees of *P. Mahaleb* L. Native of Europe. Used for umbrella handles. Presented by Bennecke Brothers, of New York.

THE SENNA FAMILY (*Caesalpiniaceae*)

6742. Clavellino.—A block of the wood of a species of *Caesalpinia*. Native of tropical America. From Venezuela.

6743. Clavellina blanca.—A block of the wood of a species of *Caesalpinia*. From Venezuela.

6744. Honey locust.—A trunk section of *Gleditsia triacanthos* L. Native of the southeastern United States and cultivated as a shade tree. From Grosseta, Italy, through the Paris Exposition of 1900.
6745. Logwood (See No. 1282). Acquired by G. V. Nash in Haïti, in 1903.
6746. Zapatero.—A block of the wood of a species of *Peltogyne*. Native of tropical America. From Venezuela.
6747. Malghan. Buswanpoa.—A block of the wood of *Bauhinia Vahlii* W. & A. Native of the East Indies. From British India.
6748. The stem of an undetermined species of *Bauhinia*. Acquired by H. H. Rusby in Venezuela, in 1896.
6749. Kachnal.—A block of the wood of *B. racemosa* Lam. Native of the East Indies. From British India.
6750–6752. Tropical American locust.—Three trunk sections of the wood of *Hymenaea Courbaril* L. Native of tropical America. Collected by H. H. Rusby in Venezuela, lower Orinoco, in April, 1896.
6753–6754. Alcornoque.—A block of the wood of *H. floribunda* H. B. K. Native of tropical America. From Venezuela.
6755.

THE MIMOSA FAMILY (*Mimosaceae*)

6756. Mimosa wood.—A trunk section of *Mimosa bahamensis* Benth. Native of the Bahama Islands. Acquired by G. V. Nash in Inagua, in 1904.
6757. Horse-flesh mahogany.—A trunk section of *Lysiloma Sabicu* Benth. Same home and collecting as preceding.
6758. Wild tamarind.—A trunk section of *L. bahamensis* Benth. Same home and source as preceding.
6759. Siris.—A block of the wood of *Albizzia Lebbeck* (L.) Benth. Native of tropical regions. From British India.
6760. Siris.—A block of the wood of *A. odoratissima* Benth. Same home and source as the preceding.
6761. Knoar. Balatti.—A block of the wood of *A. procera* Benth. Native of the East Indies. From British India.
6762. Tamba.—A block of the wood of *Xylia dolabriformis* Benth. Native of the Malay region. From British India.
6763. Rosa montana.—A trunk section of *Brownea coccinea* Jacq. Native of tropical America. Collected by H. H. Rusby at Sacupana, lower Orinoco, Venezuela, April, 1896.
6764. Elongated sections of the preceding species. Same source as preceding.
6765–6767. Four sticks of the same wood for use in cane-making. Same source.
6768. Rosa montana.—Trunk section of a species of *Brownea*. No data.

THE PEA FAMILY (*Fabaceae*)

6769. Teba.—A block of the wood of a species of *Machaerium*. Native of tropical America. From Venezuela.
6770. Lead-tree.—Trunk section of *Leucaena glauca* (L.) Benth. Native of tropical America. Collected by J. A. Shafer in Montserrat, February, 1907.
6771. Padou.—A block of the wood of *Pterocarpus indicus* Willd. Native of the East Indies. From British India.

6772. Gray dyer's weed.—A trunk section of *Genista cinerea* DC. Native of southeastern Europe. From Porto Maurizzio, Italy, through the Paris Exposition of 1900.

6773. Furze gorse.—A trunk section of *Ulex europaeus* L. Native of Europe. From Florence, Italy, through the Paris Exposition of 1900.

6774. Three stem-bases of the preceding, used for umbrella handles. Presented by Bennecke Brothers.

6775. A cane made of the same wood. Presented by William Demuth & Company, of New York.

6776. Caracolillo.—A trunk section of *Sabinea punicea* Urban. Native of tropical America. Collected by A. A. Heller in Porto Rico, March, 1900.

6777. St. John's bread. Ceratonia.—A trunk section of *Ceratonia Siliqua* L. Native of Europe and Asia. From Syracuse, Italy, through the Paris Exposition of 1900.

6778. Palo-palo.—A trunk section of *Pterocarpus officinalis* Jacq. Native of tropical America. Collected by A. A. Heller in Porto Rico, March, 1900.

6779. Sisham. Black wood.—A block of the wood of *Dalbergia latifolia* Roxb. From British India.

6780. Sisham-sissu. Sissow.—A block of the wood of *D. Sissoo* Roxb. From British India.

6781. Another block of the preceding.

6782. Bitch-wood.—A trunk section of *Lonchocarpus latifolius* (Willd.) H. B. K. Native of tropical America. Collected by G. V. Nash in Haïti, in 1903.

6783. Roble-blanco.—A block of the wood of *Platymiscium polystachyum* Griseb. Native of tropical America. From Venezuela.

6784. Karanj.—A block of the wood of *Pongamia glabra* Vent. Native of Asia and Australia. From British India.

6785. Clammy locust.—A trunk section of *Robinia viscosa* Vent. Collected in the New York Botanical Garden.

6786. Kaloxylon. Ammodendron.—A trunk section of an undetermined species of *Ammodendron*. From Siberia.

6787. Scorpion senna.—A trunk section of *Coronilla Emerus* L. Native of Europe. From Grossetta, Italy, through the Paris Exposition of 1900.

6788. Durote.—A block of the wood of a species of *Inocarpus*. Native of tropical America. From Venezuela.

6789. Broom.—A trunk section of *Cytisus scoparius* (L.) Link. Native of Europe. From Arezzo, Italy, through the Paris Exposition of 1900.

6790. Scotch Laburnum.—A trunk section of *Laburnum alpinum* Griseb. Native of Europe. From Florence, Italy, through the Paris Exposition of 1900.

6791. Lignum-vitae toddy-stick.—Made of the wood of a species of *Guaiacum* (*Zygophyllaceae*—Guaiac Family). Native of tropical America. Presented by the Redlich Manufacturing Company, of Chicago.

6792. Quebra-hacha.—A block of the wood of *Guaiacum arboreum* DC. Native of tropical America. From Venezuela.

THE RUE FAMILY (*Rutaceae*)

6793. Kuladi. Kugumbi.—A block of the wood of *Limonia alata* Wall. Native of the East Indies. From British India.

6794. Martinique prickly ash.—A trunk section of *Zanthoxylum martinicense* (Lam.) DC. Native of the West Indies. Collected by H. H. Rusby on the lower Orinoco, Venezuela, in April, 1896.

6795. Espino.—A trunk section of the preceding species, collected by A. A. Heller in Porto Rico, March, 1900.

6796. Satin-wood.—A block of the wood of *Z. brachyacanthum* F. Müll. Native of Australia. From New South Wales.

6797. Yellow-wood.—A trunk section of *Z. flavum* Vahl. Native of southern Florida and the West Indies. Collected by G. V. Nash in Inagua, in 1904.

6798. Pimburu.—A block of the wood of *Atalantia missionis* Oliver. Native of the East Indies. From Ceylon.

6799. Bitter orange.—A trunk section of *Citrus vulgaris*. Native of Asia and cultivated in all tropical countries. Collected by G. V. Nash in Haïti, in 1903.

6800–6801. Sweet orange stick and cane.—The trunk of a young tree and a cane made from the same, of *C. Aurantium* L. Native of Asia and cultivated in all tropical countries. Presented by William Demuth & Company of New York City.

6802. Spathelia.—A trunk section of *Spathelia glabrescens* Planch. Native of the West Indies. Collected by N. L. Britton in the Santa Cruz Mountains, Jamaica.

THE QUASSIA FAMILY (*Simaroubaceae*)

6803. Alvaradoa.—A trunk section of *Alvaradoa amorphoides* Liebm. Native of tropical America. Collected by J. K. Small in Dade County, Florida, November, 1906.

6804. Bay cedar.—A trunk section of *Suriana maritima* L. (*Surianaceae*—Suriana Family). Native of tropical and subtropical America. Collected by J. K. Small on Elliott's Key, Florida, November, 1906.

6805. Mase.—A trunk section of *Tetragastris balsamifera* (Sw.) Kuntze (*Burseraceae*—Myrrh Family). Native of tropical America. Collected by A. A. Heller in Porto Rico, March, 1904.

6806. Ceylon elemi. Kekuna.—A block of the wood of *Canarium zeylanicum* Blume (Same family). Native of tropical Asia. From Ceylon.

6807. West Indian birch.—A trunk section of *Elaphrium Simarouba* (L.) Rose (Same family). Native of tropical America. Collected by G. V. Nash in Haïti, in 1903.

THE MAHOGANY FAMILY (*Meliaceae*)

6808. Indian mahogany.—A block of the wood of *Cedrela Toona* Roxb. From British India.

6809. Chan-chin.—A block of the wood of *C. sinensis* Juss. Native of eastern Asia. From Japan.

6810. Tropical cedar.—A trunk section of *C. odorata* L. Native of tropical America. Collected by H. H. Rusby at Caraipa, lower Orinoco, Venezuela, in May, 1896.

6811. Two other sections of the same. Same collection.

6812. Dhoura. Indian satin-wood.—A block of the wood of *Chloroxylon Swietenia* DC. Native of the East Indies. From British India.

6813. Rosewood.—A block of the wood of *Dysoxylum Fraseranlum* Benth. Native of Australia. From New South Wales.

6814. Bohuna. Indian redwood.—A block of the wood of *Soymida febrifuga* Juss. From British India.

6815. Carapa. Crab-nut tree.—A trunk section of *Carapa guianensis* Aubl. Native of northern South America. Collected by H. H. Rusby at Santa Catalina, lower Orinoco, Venezuela, May, 1896.

6816. Nim. Neem. Margosa tree.—A block of the wood of *Melia Azedarach* L. Native of the East Indies. From British India.

6817. China-tree. Pride-of-China.—A trunk section of *M. Azedarach* L. Native of Asia and cultivated for ornament and shade. Collected by G. V. Nash in Haïti, in 1903.

6818. Mahogany.—A trunk section of *Swietenia Mahagani* L. Collected by G. V. Nash in Haïti, in 1903.

6819. Tropical redwood.—A trunk section of *Guarea trichilioides* L. Collected by G. V. Nash in Haïti, in 1903.

6820. Red-bean.—A block of the wood of *Dysoxylum Muelleri* Benth. Native of Australia. From New South Wales.

6821. Incense wood.—A trunk section of an undetermined species of *Trichilia*. Collected by H. H. Rusby at Manoa, lower Orinoco, Venezuela, in May, 1896.

6822. Amari.—A block of the wood of *Amoora spectabilis* Miq. From British India.

6823. Tallow-berry.—A trunk section of *Byrsonima cuneata* (Turez) P. Wilson (*Malpighiaceae*—Malpighia Family). Native of southern Florida and the West Indies. Collected by G. V. Nash in Inagua, in 1904.

THE SPURGE FAMILY (*Euphorbiaceae*)

6824. Sand-box tree.—A section of the wood of *Hura crepitans* L. Native of tropical America. Collected by G. V. Nash in Haïti, in 1903.

6825. Savia.—A trunk section of *Savia bahamensis* Britton. Native of the West Indies. Collected by G. V. Nash in Inagua, 1904.

6826. Tree spurge.—A trunk section of *Euphorbia dendroides* L. Native of the Mediterranean region. From Rome, Italy, through the Paris Exposition of 1900.

6827. Lechero.—A block of the wood of *E. caracasana* Boiss. Native of tropical America. From Venezuela.

6828. Kamala.—A block of the wood of *Mallotus rhamnifolius* Muell. Arg. Native of the East Indies. From Ceylon.

6829. Palo amarillo.—A trunk section of *Euphorbiodendron fulvum* (Stapf.) Millsp. Native of Mexico. Collected by H. H. Rusby at Salvatierra, Mexico, in 1910.

6830. Box-tree stem-bases.—Stem-bases of *Buxus sempervirens* L. (*Buxaceae*—Box Family). Native of the Mediterranean region and cultivated. Used for umbrella handles. Presented by Bennicke and Brother, of New York.

THE SUMAC FAMILY (*Anacardiaceae*)

6831. Cashew. Caju.—A trunk section of *Anacardium occidentale* L. Native of tropical America and cultivated. Collected by G. V. Nash in Haïti in 1903.

6832. A block of the wood of the preceding species. No data.

6833. Bhela.—A block of the wood of *Semecarpus Anacardium* L. f. From British India.

6834. Common sumac.—A trunk section of *Rhus glabra* L. Native of eastern and central North America. Collected by R. M. Harper on Goose River, Florida, January, 1904.

6835. Hog plum.—The trunk section of *Spondias purpurea* L. Native of tropical America and cultivated for its fruit. Collected by G. V. Nash in Haïti, 1903.

6836. Etambe.—A block of the wood of *Mangifera zeylanica* Hook. f. Native of the East Indies. From Ceylon.

6836.1. Mango wood.—A trunk section of *Mangifera indica* L. Native of India and cultivated for its fruit. From Haïti.

6837. Moohal. Molime.—A block of the wood of *Odina Wodier* Roxb. Native of the East Indies. From British India.

6838. Muley. Sandal-wood.—A block of the wood of *Odina gummifera* Blume. Used by the Malays of Singapore for the manufacture of their shoes. Collected by P. Wilson in Singapore, June, 1901.

6839. Sandals of the preceding wood, worn by the Malays of Singapore.

6840. Chian turpentine.—A trunk section of *Pistacia Terebinthus* L. Native of southern Europe. From Grossetta, Italy, through the Paris Exposition of 1900.

6841. Holly wood.—A trunk section of *Ilex monticola* A. Gray (*Ilicineae*—Holly Family). Native of North America.

6842. European holly.—A trunk section of *Ilex Aquifolium* L. Native of Europe. From Florence, Italy.

6843. Moke.—A block of the wood of *Schrebera swietenoides* Roxb. (*Celastraceae*—Staff-tree Family). Native of the East Indies. From British India.

6844. European spindle-tree.—A trunk section of *Euonymus europaeus* L. Native of Europe (Same family). From Grossetta, Italy, through the Paris Exposition of 1900.

6845. Field maple.—A trunk section of *Acer campestre* L. (*Aceraceae*—Maple Family). Native of Europe and western Asia. From Florence, Italy, through the Paris Exposition of 1900.

6846. Three-lobed maple.—A trunk section of *A. monspessulanum* L. Native of southern Europe. Same source as preceding.

6847. Italian maple.—A trunk section of *A. italum* Lauth. Native of southern Europe. From Arrezzo, Italy, through the Paris Exposition of 1900.

6848. Sugar maple, or rock maple, faucet.—A faucet made of the wood of *A. saccharum* Marsh (See No. 3084). Presented by the Redlich Manufacturing Company, of Chicago, Illinois.

6849. Sugar maple, or rock maple, mudlar.—A mudlar, or toddy-stick, made of the preceding wood. Same donor.

6850. Tochi-no-ki.—The wood of *Aesculus turbinata* Blume (*Hippocastanaceae*—Horsechestnut Family). Native of Japan.

6851. Dodonaea wood.—A trunk section of *Dodonaea viscosa* L. (*Sapindaceae*—Soapberry Family). Native of tropical and subtropical America. Collected by G. V. Nash in Haïti, in 1903.

6852. Kosuba. Ceylon oak.—A block of the wood of *Schleichera trijuga* Willd. (Same family). Native of the Malay region. From British India.

6853. Mamon.—A block of the wood of *Melicocca bijuga* L. (Same family). Native of tropical America and cultivated for its fruit. From Venezuela.

THE BUCKTHORN FAMILY (*Rhamnaceae*)

6854. Ber. Jujube.—A block of the wood of *Zizyphus Jujuba* Lam. Native of the East Indies. From British India.

6855. Jujube tree.—A trunk section of *Z. sativa* Gaertn. Native of the Mediterranean region and cultivated. From Cosenza, Italy, through the Paris Exposition of 1900.

6856. Christ's thorn.—A trunk section of *Paliurus aculeatus* Lam. Native of southern Europe and adjacent Asia. From Grosseta, Italy, through the Paris Exposition of 1900.

6857. Common buckthorn.—The thin stems of *Rhamnus cathartica* L. Native of temperate regions of the Old World and occasional in North America. From Vicenza, Italy, through the Paris Exposition of 1900.

6858. Alaternus.—A trunk section of *R. Alaternus* L. Native of the Mediterranean region. From Grosseta, Italy, through the Paris Exposition of 1900.

THE BASSWOOD FAMILY (*Tiliaceae*)

6859. Mountain ash.—A block of the wood of *Elaeocarpus grandis* F. Müll. Native of Australia. From New South Wales.

6860. Basswood barrel head.—A barrel head of the wood of *Tilia americana* L. Native of eastern and central North America. Presented by C. Heidt & Son, of Jersey City, New Jersey.

6861. Basswood broom handle.—A broom handle made of the preceding wood. Presented by G. Josephi.

6862. Shina-no-ki.—A block of the wood of *T. japonica* (Miq.) Simonkai. From Japan.

6863–6865. Russian basswood spoons.—Three sets of spoons made of the wood of a Russian basswood, or *Tilia*. From the Paris Exposition of 1900.

6866. Three Russian pipes made of the same wood. Same source.

6867. Dhaman.—A block of the wood of *Grewia tiliaefolia* Vahl. Native of tropical Asia and Africa.

6868. Semul. Silk-cotton tree.—A block of the wood of *Bombax malabaricum* DC. Native of the East Indies. From British India.

THE COLA FAMILY (*Sterculiaceae*)

6869. Muchkand.—A block of wood of *Pterospermum suberifolium* Lam. Native of the East Indies. From British India.

6870. Bastard cedar.—A trunk section of *Guazuma Gauazuma* (L.) Cockerell. Native of tropical America. Collected by G. V. Nash in Haïti, in 1903.

6871. Hadang.—A block of the wood of *Eriolaena Candollei* Wall. Native of the East Indies. From British India.

6872. Hadang bute.—Another specimen of the preceding.

6873. Shiracuchi.—A trunk section of *Actinidia arguta* Franch & Sav. (*Theaceae*—Tea Family). Native of eastern Asia. From Japan.

6874. Makusal.—A block of the wood of *Schima Wallichii* Choisy (Same family). From British India.

6875. Mammee, or maumee, apple.—A trunk section of *Mammea americana* L. (*Guttiferae*—Gamboge Family). Native of tropical America and cultivated for its fruits. Collected by G. V. Nash in Haïti, in 1903.

6876. Sereyeh.—Sandals made from the wood of *Shorea Guiso* Blume. (*Dipterocarpaceae*—Dipterocarpus Family). Native of the East Indies. Acquired by P. Wilson in Singapore, in June, 1901.

6877. Meranti. Sal.—A block of the wood of *S. robusta* Gaertn. f. Same source as preceding.

6878. Sandals made of the preceding wood, worn by the Malays of Singapore. Same source as the preceding.

6879. African tamarisk.—A trunk section of *Tamarix africana* Poir. (*Tamariscineae*—Tamarisk Family). Native of the Mediterranean region. From Cosenza, Italy, through the Paris Exposition of 1900.

6880. Nash's prickly pear.—Two trunk sections of *Opuntia Nashii* Britton (*Cactaceae*—Cactus Family). Collected by G. V. Nash in Inagua, in 1904.

6881. Cactus cane.—A cane made of the stem of *O. imbricata* (Haworth) DC. Native of southwestern North America. Made by the Papago Indians. Acquired by D. T. MacDougal in Sonora, Mexico, February, 1902.

6882. Arjunda.—A block of the wood of *Lagerstroemia Flos-reginae* Retz (*Lythraceae*—Loosestrife Family). Native of the East Indies. From British India.

6883. Nana. Bada.—A block of the wood of *L. lanceolata* Wall. Same home and source as the preceding.

6884. Another of the same, from the same source.

6885. Cocos de Mon.—A block of the wood of a species of *Lecythis* (*Lecythidaceae*—Monkey-nut Family). Native of tropical America. From Venezuela.

6886. Guatacare.—A block of the wood of *L. Idatimon* DC. Same home and source as the preceding.

6887. Ela. Mudella.—A block of the wood of *Barringtonia acutangula* Gaertn. (Same family). Native of the Molucca Islands. From Ceylon.

THE COMBRETUM FAMILY (*Combretaceae*)

6888. White mangrove.—A trunk section of *Laguncularia racemosa* (L.) Gaertn. f. Native of tropical America. Collected by G. V. Nash in Haïti, in 1903.

6889. Dhawra.—A block of the wood of *Anogeissus latifolia* Wall. From British India.

6890. Panisa.—A block of the wood of *Terminalia myriocarpa* Heuck. & Muell. From British India.

6891. Kindal. Bilimati.—A block of the wood of *T. paniculata* Roth. Same source.

6892. Ain Sasada. Karimati.—Wood of *Buceras tomentosa* (W. & A.) Rusby (*Terminalia tomentosa* W. & A.). Native of the East Indies. From British India.

6893. West Indian almond.—A trunk section of *Terminalia Catappa* L. Native of tropical America and cultivated for shade and for its edible seeds. Collected by G. V. Nash in Haïti, in 1903.

THE MYRTLE FAMILY (*Myrtaceae*)

6894. Common myrtle.—A trunk section of *Myrtus communis* L. Native of Europe and cultivated for ornament. From Pisa, Italy, through the Paris Exposition of 1900.

6895. Guava.—A trunk section of *Psidium Guajava* L. Native of tropical America and cultivated for its fruit. Collected by H. H. Rusby at Sacupana, lower Orinoco, Venezuela, April, 1896.

6896. Red stopper.—A trunk section of *Eugenia rhombea* (Berg.) Kr. & Urb. Native of tropical America. Collected by G. V. Nash in Inagua, in 1904.

6897. Tiwas. Kanara.—A block of the wood of a species of *Eugenia*. Native of the East Indies. From British India.

6898. Black butt.—A block of the wood of *Eucalyptus siderophloia* Benth. Native of Australia. From New South Wales.

6899. Iron-bark.—A block of the wood of *E. pilularis* Smith. Same source as preceding.

6900. Mucurutu.—A block of the wood of *Couroupita guianensis* Aubl. Native of tropical America. From Venezuela.

6901. Chytracula.—A trunk section of *Calyptranthes Zuzygium* (L.) Sw. Native of the West Indies. Collected by G. V. Nash in Haïti, in 1903.

6902. Harigira.—A block of the wood of *Acanthopanax ricinifolium* Seem. (*Araliaceae*—Ivy Family). Native of eastern Asia. From Japan.

6903. Grayumo macho.—A trunk section of *Didymopanax Morototoni* (Aubl.) Decne. & Planch. (Same family). Native of tropical America. Collected by G. V. Nash in Haïti, in 1903.

6904. Tupelo broom handles.—Two broom handles made of the wood of a species of *Nyssa* (*Cornaceae*—Dogwood Family). Native of the southeastern and central United States. Presented by G. Josephi, April, 1903.

6905. Dogwood cane stick.—A young trunk of *Cynoxylon floridum* (L.) Raf. (See No. 5282). Presented by William Demuth & Company, of New York.

THE HEATHER FAMILY (*Ericaceae*)

6906. Ivy pipe.—A pipe made of the wood of *Kalmia latifolia* L. Native of eastern North America. Same donor as preceding.

6907. Briar-wood.—A block of the wood of *Erica arborea* L. Native of the Mediterranean region. Same donor.

6908–6911. Briar-wood pipes, showing stages in manufacture. Same donor.

6912–6925. A collection of 14 pipes made from the preceding. Same donor.

6926. Briar-wood, or heather, fruit.—The fruit of the preceding species. From the Paris Exposition of 1900.

6927. Strawberry tree.—A trunk section of *Arbutus Unedo* L. Native of Europe. From Grosseta, Italy, through the Paris Exposition of 1900.

6928. Vedu-karnari.—A block of the wood of *Diospyros ovalifolia* Wight (*Ebenaceae*—Persimmon Family). Native of the East Indies. From Ceylon.

6929. Kinogaki. Mamegaki.—A trunk section of *D. Lotus* L. From Japan.

6930. Kaki.—A block of the wood of *D. Kaki* L.f. Same source.

6931. Ebony cane.—Made of the wood of *Diospyros Ebenum* Koen. Native of the East Indies. Presented by William Demuth & Company, of New York.

6932. Musuba. Sapodilla.

6933. Mahua or butter-tree.—A block of the wood of *Bassia latifolia* Roxb. (Same family). From British India.

6934. Balata.—A trunk section of *Mimusops Balata* Cruger, or *M. globosa* Gaertn. f. (Same family). Native of tropical America. Collected by H. H. Rusby at Santa Catalina, lower Orinoco, Venezuela, in 1896.

6935. Wild dilly.—A trunk section of *M. emarginata* (L.) Britton. Native of southern Florida and the West Indies. Collected by G. V. Nash at Inagua, in 1904.

6936. Olive wood.—A trunk section of *Olea europaea* L. (See No. 1696). From the Paris Exposition of 1900.

6937. Privet.—A trunk section of *Ligustrum vulgare* L. Native of Europe and used for hedges. From Florence, Italy, through the Paris Exposition of 1900.

6938. Phillyrea.—A trunk section of *Phillyrea variabilis* Timb. Native of Europe. From Sassari, Italy, through the Paris Exposition of 1900.

6939. Toneriko. A block of the wood of *Fraxinus pubinervis* Blume. Native of eastern Asia. From Japan.

6940. White-ash barrel stave.—A barrel stave made of the wood of *F. americana* L. Native of eastern and central North America. Presented by C. Heidt & Son.

6941. Niramali.—A block of the wood of the clearing-nut tree, *Strychnos potatorum* L. f. (*Loganiaceae*—Nux-vomica Family). Native of the East Indies. From British India.

THE DOGBANE FAMILY (*Apocynaceae*)

6942. Jelutong wood.—A block of the wood of *Dyera costulata* Hook. f. Native of the Malay region. Obtained by P. Wilson in Singapore, June, 1901.

6943. Sandals made from the preceding wood and worn by the Malays of Singapore.
6944. Chinese women's sandals.—Made of the same wood. Same source as the preceding.
6945. Chinese men's sandals, of the same wood. Same source.
6946. Jasmine tree.—A trunk section of *Plumiera inaguensis* Britton. Native of the Bahama Islands. Collected by G. V. Nash at Inagua, Bahamas, 1904.
6947. Azaharito.—A block of the wood of *Tabernaemontana* sp. Native of tropical America. From Venezuela.

6948. Dhengum.—A block of the wood of *Cordia Macleodii* Hook. f. & Thoms. (*Boraginaceae*—Borage Family). Native of the East Indies. From British India.
6949. Pardillo del Monte. A block of the wood of *C. gerascanthoides* (L.) H. B. K. Native of tropical America. From Venezuela.
6950. Fiddle-wood.—Trunk section of *Vitex cymosa* Bert. (*Verbenaceae*—Verbena Family). Native of tropical America. Acquired by H. H. Rusby in May, 1896, at Sacupana, Venezuela.
6951. Fiddle-wood.—A trunk section of *Citharexylum fruticosum* L. (Same family). Native of the West Indies. Acquired by G. V. Nash in Haïti, in 1903.
6952. Sagwan. Teak.—A block of the wood of *Tectona grandis* L. (Same family). Native of the East Indies. From British India.
6953. Shiven.—A block of the wood of *Gmelina arborea* Roxb. Same family, nativity, and source.
6954. Rosemary.—A trunk section of *Rosmarinus officinalis* L. (*Labiatae*—Mint Family). Same region and source as preceding.
6955. Evergreen lavender.—A trunk section of *Lavandula Stoechas* L. Native of the Mediterranean region. From Sassai, Italy. From the Paris Exposition of 1900.
6956. Potato-tree.—A trunk section of *Solanum verbascifolium* L. (*Solanaceae*—Potato Family). Native of tropical and subtropical America. Collected by J. K. Small in Dade County, Florida, November, 1903.
6957. Kiri.—A block of the wood of *Paulownia tomentosa* (Thunb.) Baill. (*Scrophulariaceae*—Figwort Family). Native of the East Indies. From Japan.

THE CALABASH FAMILY (*Bignoniaceae*)

6958. Calabash tree.—A trunk section of *Crescentia Cujete* L. Native of tropical America and cultivated for its fruit-shell, or rind. Collected by G. V. Nash in Haïti, in 1903.
6959. Calabash fruits.—Two fruits of the preceding species. Obtained by P. Wilson in Porto Rico, in 1902.
6960. Calabash dippers.—Twelve dippers, the bowls of which are made of the shells of the preceding fruit. Acquired by P. Wilson in Porto Rico, in 1902.
6961. Six of the same, of different style. Same source.
6962–6967. Carved calabash work-baskets.—Six carved work-baskets of the same material. Same collection.
6968. Calabash bucket.—A bucket made of the same material. Acquired by S. Henshaw in Jamaica, in 1901.

6969–6970. Calabash bowls.—Two bowls of the same. Acquired by P. Wilson in Porto Rico, in 1902.

6971. Pullung. Warras.—A block of the wood of *Heterophragma Roxburghii* DC. Native of the East Indies. From British India.

6972. West Indian Catalpa.—A trunk section of *Macrocatalpa longissima* (Jacq.) Britton. Native of the West Indies. Collected by G. V. Nash in Haïti, in 1903.

6973. White cedar.—A trunk section of *Tabebuia bahamensis* (Northrup) Britton. Native of the Bahama Islands. Collected by G. V. Nash in Inagua, in 1904.

6974. Arraguarrei. Roble colorado.—A block of the wood of *Tabebuia pentaphylla* (Juss.) Hemsl. Native of tropical America. From Venezuela.

6975. Another specimen of the same. From the same source.

6976. Roble negro.—A block of the wood of a species of *Tabebuia*. Native of tropical America. From Venezuela.

6977.

THE MADDER FAMILY (*Rubiaceae*)

6978. Seven-year apple.—A trunk section of *Casasia clusiaefolia* (Jacq.) Urban. Native of tropical America. Collected by G. V. Nash in Inagua, 1904.

6979. Palo de toro.—A section of the wood of *Faramea occidentalis* (L.) A. Rich. Native of tropical America. Collected by A. A. Heller in Porto Rico, March, 1900.

6980. Botoncillo.—A section of the wood of an unidentified tree. Same home and collection as preceding.

6981. Prince-wood.—A trunk section of *Exostema caribaeum* (Jacq.) R. & S. Native of tropical America. Collected by G. V. Nash in Inagua.

6982. Cuero de Sapo.—A trunk section, probably of the preceding species. Collected by A. A. Heller in Porto Rico, 1900.

6983. Kalam.—A dressed block of the wood of *Mitragyna parvifolia* Korth. Native of the East Indies. From British India.

6984. Cutlet.—A trunk section, probably of *Duroia Sprucei* Rusby. Native of tropical America. Collected by H. H. Rusby at Sacupana, lower Orinoco, Venezuela, in 1896.

6985. False cutlet.—A trunk section, probably of a species of *Duroia*. Same source as the preceding.

6986. Viburnum. Laurestine.—A trunk section of *Viburnum Tinus* L. (*Caprifoliaceae*—Honeysuckle Family). Native of Europe. From Rome, Italy, through the Paris Exposition of 1900.

6987–6989. Guicharo or Guiro.—Three gourd musical instruments made from the shell of the fruit of a species of *Cucurbita* (*Cucurbitaceae*—Gourd Family). Native of tropical America, and cultivated for the edible fruit. Acquired by P. Wilson, in Porto Rico, in 1902.

6990. Ditas.—Another style of the same. Same source.

6991. Gourd nicks. Gourd pipe bowls.—Two pipe bowls made of the preceding material. Presented by William Demuth & Company, of New York.

6992. Thistle cane.—A cane made of the stem of a thistle, probably *Cirsium lanceolatum* (L.) Hill (*Carduaceae*—Thistle Family). Same donor.

Following No. 6992, and in the same case, are a number of wood-samples of which the botanical origins are unknown.

Charcoals

Vegetable carbon, or charcoal, is the solid residue left after driving off the volatile constituents from vegetable substances by the action of heat, oxygen being mostly excluded during the process. Such charcoal consists chiefly of carbon, but among its particles exist various minerals ubstances, chiefly silica. In proportion to the amount and character of these mineral matters, the properties of the carbon differ, as does its usefulness for various purposes. In the making of gunpowder, the presence of crystalline silica is liable to generate sufficient heat in grinding to cause explosions and great care must be taken to select woods for such charcoal that are free from such crystals. For burning purposes, the greatest proportion of carbon gives the best results. For electric light carbons, a great abundance of particles affording incandescence is requisite.

Unless otherwise specified, the following charcoals were presented by the General Electric Company.

6993. Matsu charcoal.—Charcoal from the wood of *Pinus densiflora* Sieb. & Zucc. (*Pinaceae*—Pine Family). Native of Japan.

6994. Typha peat.—The natural peat resulting from the remains of *Typha angustifolia* L. (*Typhaceae*—Cat-tail Family). A swamp plant of the north temperate zone. As a result of pressure and long continued slight heat, partial carbonization has taken place. The specimen is from the shore of the Miami River, Florida, and various other plants are mixed with the cat-tails. Collected by C. F. Sulzer, November, 1912.

6995. Mariscus peat.—Peat resulting like the preceding, from the remains of *Mariscus jamaicensis* (Crantz) Britton (*Cyperaceae*—Sedge Family), mixed with other sedges, grass, etc. Native of the warm parts of America. Collected in the Florida Everglades by C. F. Sulzer, November, 1912.

6996–7004. A series of specimens illustrating bamboo stems, formerly used in making incandescent electric light carbons, showing the six successive steps in splitting the bamboo to the necessary fineness.

6996–7002. Seven splints of different thickness.

7003. The mounted bamboo carbon ready for insertion in the lamp.

7004. The finished bamboo carbon lamp.

7004.1. Rice-hull charcoal.—The charcoal resulting from burning the hulls of rice, at the rice mills.

7005. Ubamikashi charcoal.—Charcoal from the wood of *Quercus phillyraeoides* A. Gray (*Fagaceae*—Beech Family). Native of Japan.

7006. Oak charcoal.—Charcoal from the wood of a Mexican species of *Quercus*. Collected by Mrs. N. L. Britton in Mexico, November, 1896.

7007. Tatayba charcoal.—Charcoal from *Maclura Mora* Griseb. (*Moraceae*—Mulberry Family). Native of tropical America. From Paraguay.

7008. Ybiraia charcoal.—Charcoal from *Ruprechtia excelsa* Griseb. (*Polygonaceae*—Knotweed Family). Native of tropical America. From Paraguay.

7009. Honoki charcoal.—Charcoal from *Magnolia hypoleuca* Sieb. & Zucc. (*Magnoliaceae*—Magnolia Family). From Japan.

7010. Araticu guazu charcoal.—From *Rollinia sylvatica* (St. Hil.) Mart. (*Annonaceae*—Custard-apple Family). Native of tropical America. From Paraguay.

7011. Laurel hu charcoal.—From *Nectandra porphyria* Griseb. (*Lauraceae*—Laurel Family). Native of tropical America. From Paraguay.

7012. Laurel crespo charcoal.—Another variety of the preceding. From a species of *Nectandra*. Same locality.

7013. Aromita charcoal.—From *Vachellia Farnesiana* (L.) W. & A. (*Mimosaceae*—Mimosa Family). Native of tropical America. From Paraguay.

7014. Curupay na charcoal.—From a species of *Acacia*. Same locality.

7015. Espinilla colorado charcoal.—From a species of *Acacia* of Paraguay.

7016. Ingueria guazu charcoal.—From a species of *Acacia* of Paraguay.

7017. Tatane charcoal.—From *Pithecolobium scalare* Griseb. (Same family). Same locality.

7018. Palo Santo charcoal.—From *Bulnesia Sarmienti* Lorentz (*Zygophyllaceae*—Caltrop Family). Native of tropical America. From Paraguay.

7019. Limon charcoal.—Charcoal from the lemon tree, *Citrus Limonum* Risso (*Rutaceae*—Rue Family). Native of Asia and cultivated in all warm countries. From Paraguay.

7020. Naranja hay charcoal.—Charcoal from the sweet-orange tree, *C. Aurantium* L. Native of China and cultivated in all warm countries. From Paraguay.

7021. Lima Paraguay charcoal.—From a species of *Citrus* cultivated in Paraguay.

7022. Lima charcoal.—From a species of *Citrus* cultivated in Paraguay.

7023. Caatigua charcoal.—From *Trichilia Catigua* A. Juss. (*Meliaceae*—Mahogany Family). Native of tropical America. From Paraguay.

7024. Espina de Corona charcoal.—From *Garugandra amorphoides* Griseb. (*Anacardiaceae*—Sumac Family). Native of tropical America. From Paraguay.

7025. Quebracho colorado charcoal.—From *Quebrachia Lorentzii* Griseb. (Same family). From the same locality.

7026. Ybaro charcoal.—From *Sapindus divaricatus* Willd. (*Sapindaceae*—Soapberry Family). Native of tropical America. From Paraguay.

7027. Ybapomo charcoal.—From *Melicocca bijuga* L. (Same family). Native of tropical America. From Paraguay.

7028. Caaobety charcoal.—From *Luehea divaricata* Mart. (*Tiliaceae*—Basswood Family). Native of tropical America. From Paraguay.

7029–7036. A series of specimens representing the former use of cotton fiber in the making of electric light carbons.

7029. Long staple cotton.—A superior variety of cotton, consisting of the hairs from the seeds of one or more species of *Gossypium* (*Malvaceae*—Mallow Family). Native of tropical America and cultivated for its fiber.

7030. Cotton squirt mixture.—A liquid with which the cotton is treated to prepare it for carbonizing.

7031. Coil fiber.—The cotton fiber coiled, ready for shaping for the lamp.

7032. Shaped fiber.—The cotton fiber in shape to go in the lamp.

7033. Untreated carbon film.—The carbonized fiber before the final treatment.

7034. Treated carbon film.—The film properly mounted for enclosing in the glass bulb.

7035.

7036. Finished cotton carbon incandescent lamp.

7037–7054 represent the modern Tungsten lamp, which has entirely replaced those in which wood carbons were used. Same donors.

7055. Pacury guazu charcoal.—From *Platonia insignis* Mart. (*Guttiferae*—Gamboge Family). Native of tropical America. From Paraguay.

7056. Guavira guazu charcoal.—From *Campomanesia crenata* Berg. (*Myrtaceae*—Myrtle Family). Native of tropical America. From Paraguay.

7057. Araza charcoal.—From the wood of the guava, *Psidium guajava.* (Same family). Same locality.

7058. Arrijan charcoal.—From *Blepharocalyx cuspidatus* Berg. (Same family). Same locality.

7059. Ybapanu charcoal.—From *Eugenia cauliflora* Miq. (Same family). Same locality.

7060. Yba hay charcoal.—From *E. edulis* B. & H. Same locality.

7061. Yba Paroity charcoal.—From *E. Michelii* Lam. Same locality.

7062. Guaviyu charcoal.—From *E. pungens* Berg. Same locality.

7063. Sapiranguy charcoal.—From a species of *Tabernaemontana* (*Apocynaceae*—Dogbane Family). Native of tropical America. From Paraguay.

7064. Guayabi hu.—From *Patagonula americana* L. (*Boraginaceae*—Borage Family). Native of tropical America. From Paraguay.

7065. Apaterebi hu charcoal.—From *Cordia alliodora* Cham. (Same family). Same locality.

7066. Taruma guazu charcoal.—From *Vitex montevidensis* Cham. (*Verbenaceae*—Verbena Family). Native of tropical America. From Paraguay.

7067. Lapacho crispo charcoal. Charcoal from *Tabebuia flavescens* B. & H. Native of Paraguay.

7068. Urandey mi charcoal.—From *Astronium Urundeuva* Engl. (*Carduaceae*—Thistle Family). Native of tropical America. From Paraguay.

7069. Brazilian Indian tinder.—A tinder used by the Brazilian Indians in making fire by friction with wooden implements. Acquired by Weiss & Schmidt on the upper Rio Negro, Brazil.

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